

# Who goes to university?

## *Inequality in access to higher education in China 1949-2005*

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# Abstract

The issue of educational inequality has become an important topic along with the rapid development of education in China. The purpose of this study is to explore the higher educational inequality in access during the period 1949-2005 in China. The study is focused on the influence of socio-economic background (region of origin, father and mother's educational level, and gender) on access to higher education. The study is also focused on the changing tendency of higher educational inequality and the relationship between educational expansion and educational inequality in China.

The study utilizes a quantitative method which includes both a cross-sectional approach and a longitudinal approach. Data are from the Chinese official social survey called Chinese General Social Survey of the year 2005 (CGSS2005). The survey includes information that can reflect one's socio-economic background and higher educational background.

The result of this study indicates that the socio-economic background could influence higher education attainment in China. Urban students have more possibilities to attain higher education, children whose parents have high-level of education are more often to receive higher education and male are more likely to attain higher education in China. Moreover the result also reveals that the degree of inequality in higher education is increasing during the study period 1949-2005. In China the expansion of higher education has not reduced the inequality problem, and the demands of higher education are still not satisfied.



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# Abbreviations

AUC	Area Under the Curve
CCP	Chinese Communists Party
CGSS2005	Chinese General Social Survey of year 2005
CSSOD	Chinese Social Survey Open Database
GDP	Gross Domestic Product
HE	Higher Education
MMI	Maximally Maintained Inequality
MOE	Ministry of Education
PRC	People's Republic of China
ROC	Receiver Operating Characteristics
SPSS	Statistical Package for Social Science
UNESCO	United Nations Educational, Scientific and Cultural Organization

# Chapter 1 Introduction

In this chapter the background of the study is discussed firstly, then research questions and some main concepts using in this study are explained. The structure of this study is illustrated lastly.

## 1.1 Background and rationale of the study

The study of educational inequality is significant for several reasons. Firstly educational inequality is not conducive to socio-economic development. Education could contribute to both the society and the individual. For the society, it could reduce crime rates, decrease unemployment rates, improve economic development, cultivate talents, advance labor productivity, and produce new technology etc. For the individual, it is closely associated with better health, a long life, good job with high salary, low risk of unemployment, well living conditions, high civic participation, acquisition of advanced knowledge etc. The participation rate in education, particularly the higher level of education, has become a standard for measuring the level of economic, political and social development of a country. The report of Rand Corporation<sup>1</sup> on educational analysis once had shown that educational equality could create large amount of financial revenue to the country and bring huge economic benefits to the society (Chen, 2000). The World Bank (1994) and the United Nations Educational, Scientific and Cultural Organization (UNESCO) (1998) also indicate that higher education could produce social, cultural, and economic benefits for both the individuals and the public. However, educational inequality would become an obstacle to achieving those targets and would impede the development of economy, politics and the society as a whole.

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<sup>1</sup> Rand Corporation is a nonprofit institution that helps improve policy and decision making through research and analysis. It focuses on issues like health, education, national security, international affairs, law and business, environment and more.

Moreover, educational inequality is also not conducive to social mobility. From a sociological perspective, education especially higher education could be seen as an instrument of public to promote social mobility. Studies have indicated, “Who gets ahead” are “those who get educated” (Muller & Shavit, 1997, p.1). Social mobility means the flow of people from lower level of status to the upper level. Higher education could enable the receiver to obtain a well paid job, better living conditions, and high social status, thus, it could help those of disadvantaged groups who have poor family backgrounds flow to an upper level of class. Like a Chinese proverb says “Knowledge changes life”. However, educational inequality that advantaged groups share better resources while disadvantaged groups share less or none of the resources would limit the mobility of society. Furthermore, it would lead to the instability of the society such as crime due to the emerging hostility among classes.

The study of educational inequality is an important theme in both international and domestic domain. In the international sphere, it has a long history of studying higher educational inequality since the WWII. However, in China the issue of educational inequality gained the focus since 1990s along with educational expansion. The process of massification happens as fast as in ten years in China. The participation rate of higher education increased from 3% in 1990 to 17% in 2003 (MOE, 2004). The fast expansion has increased the opportunity on higher education, meanwhile problems emerge too. For example, does socio-economic background still influence higher education attainment? Does quantitative growth decrease higher education inequality to any level of class regardless of different advantages or disadvantages of them? Many Chinese scholars are working on the problems from distinct study perspectives. Some of the pronounced studies include Gou’s (2006) “Enrolling opportunity and higher education equality in rural and urban vision”; Wang’s (2007) “The consideration of improving gender equality in higher education”; Liu’s (2007) “Examination of regional disparities of higher education opportunity during the rapid expansion period”; Wen’s (2005) “The Impacts of SES on higher education opportunity and graduate employment in China”; and Xie & Wang’s (2006) “The

difference in higher education access opportunity of the children in different strata in China in the context of the popularization of higher education” etc. The Educational Report of the 10<sup>th</sup> Chinese Five-Year Plan indentified rural-urban difference, provincial difference, ethical difference, and gender difference as the main factors that could cause higher education inequality in China. Meanwhile, the social class difference that aggravates higher education inequality has become a significant factor in recent times. These problems have thus attracted much attention in China.

In modern China, to build a Harmonious Socialist Society<sup>2</sup> is a sustaining strategic objective. Educational equality has been regarded as a key component of improving the harmonious society. The government has paid more and more attention to lowering the inequality. The Chinese government put forward that ‘insisting on educational development and promoting educational equality’ was a strategy in the 6th plenary session of the 16<sup>th</sup> Central Committee in 2006 (Li & Wu, 2010). Improving educational equality has become a fundamental educational policy and a primary task of educational reform in China now. Moreover, Chinese higher education is experiencing a rapid development; the study of educational inequality is conducive to the educational reform and the implementation of educational policy. It could also promote socio-economic development and social stability in China.

Since the study of educational inequality is so significant, the present study is going to analyze the inequality issue in access to higher education in China during the period of 1949 and 2005. The study will be only focus on the access process of higher education because of the data. The aim of the study is to understand how socio-economic background such as region of origin and parents’ education influence students’ higher education attainment. The study also intends to find out how the impacts change in different historical stages from traditional to present China under

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<sup>2</sup> To build a harmonious socialist society is a very important political mission of the Chinese Communist Party, which was put forward in the 4th plenary session of the 16<sup>th</sup> Central Committee in 2004. It means all people could be well positioned and do their best in a harmonious society. It is a guiding line as well as a core objective of the Party in modern China.

the situation of educational reform and expansion in the last fifty-six years. Therefore, it is a study that integrates the analysis of regional difference, cultural background difference and gender difference which could influence higher education attainment and it is a study that crosses a long period of history. The study could help us to understand the development process and changing tendency of Chinese higher education.

## **1.2 Research questions**

The present study is mainly focused on the following research questions:

1. How does socio-economic background influence access to higher education in China, and what are the changes during the period 1949-2005?
2. What is the degree of Chinese higher education inequality, and what is the changing tendency during the period 1949-2005?
3. What is the relationship between educational expansion and educational inequality?  
In other words, has educational expansion reduced educational inequality in access to higher education in China?

## **1.3 Main concepts definitions**

The research will be focused on the following concepts: educational inequality, social inequality, access to higher education and socio-economic background (in terms of economic capital, cultural capital, and social capital). These concepts will be discussed in Chapter 3 “Conceptual framework and theoretical foundation” in detail. Here are the definitions of those four concepts mainly used in this study.

- 1) Educational inequality refers to an individual cannot attain one certain of education due to the impacts of external factors like socio-economic background, gender, race and origin that one cannot decide.
- 2) Social inequality refers to one individual cannot enjoy the rights he/she should

have because of the influence of external factors. It is a wider concept that includes educational inequality in this study.

- 3) Access to higher education means one individual gets the status of being a student in a higher education institution. The issue of higher education equality is mainly reflected on access equality, progress equality, and outcome equality, and access is the starting point.
- 4) Socio-economic background refers to one's position, situation and status. It will be measured by three forms of capital in this study:
  - a. Economic capital refers to one's financial or monetary situation.
  - b. Cultural capital is most manifested in the form of educational qualifications which involves the knowledge, skills, certificate, diploma etc. one individual achieves in his life.
  - c. Social capital refers to the interpersonal relationship one owns in the social groups.

## **1.4 Structure of the thesis**

The first chapter has presented the background, rationale and limitations of this study, as well as the research questions and several major concept definitions. Following in chapter 2 an introduction of the Chinese higher education system will be provided. The social, political, and economic background about higher education in China during the period under research will be also introduced in chapter 2 in order to understand the changes in the higher education system.

Chapter 3 deals with the conceptual framework and theoretical foundation. It firstly discusses the key concepts of equality and educational equality as well as the relationship between social inequality and educational inequality in this study. Then it outlines the most important theoretical foundation which includes the three forms of capital theory and the study-hypothesis, together with the indicator of inequality index



adopted in this study. Chapter 4 describes the information of data and the methodology of this study. The chapter contains the source of data, an introduction of variables as well as a discussion on the validity and reliability issues. Research design and methodology will be discussed in detail.

Chapter 5 and 6 are exclusively based on empirical finding and conclusion of the study. Chapter 5 offers the main results of the study around the research questions. Chapter 6 provides a summarized conclusion of the research and a discussion about the usage and assessment of the theory. In addition, the final chapter provides a number of general implications and suggestions for policymaking as well as the future research of inequality in higher education.

# Chapter 2 The Chinese context

This chapter introduces two main issues under the Chinese context. The first one is the contemporary system of Chinese higher education and the second one is the reform history of Chinese higher education from 1949 to 2005 with its social, political and economic background.

## 2.1 The contemporary Chinese higher education system

In this section the contemporary Chinese higher education system is elaborated from the aspects of structure, types, governance, financing as well as transition process.

### 2.1.1 Structure of Chinese higher education

According to Article Two of the Higher Education Law of 1998, higher education in China is defined as “education that is carried out after the completion of senior secondary education”.

China’s higher education consists of undergraduate education and postgraduate education. Undergraduate education includes bachelor education and tertiary vocational education. The bachelor education (*Benke*) usually lasts four years and leads to a bachelor degree that is mainly academically focused, while the tertiary vocational education (*Zhuanke*) takes three years and leads to a vocational certificate with strong emphasis on professional training. Therefore, the former is mostly offered at universities and the later is mostly provided at vocational colleges. The public regards tertiary vocational education as lower level than bachelor education because

vocational education only offers diploma but no degree<sup>3</sup>. However tertiary vocational students can upgrade to the bachelor level by passing a required exam. Limitation of the transition is that vocational education students can only apply for bachelor program that is strongly related to their previous vocational program.

According to the Education Law, the expectation from the bachelor level education is that it:

*“...shall equip students with the essential principles and general knowledge of the discipline and subject area in a relatively systematic way, and the essential basic skills and methods and relevant knowledge of the subject area, and the elementary ability to conduct practical work and research work within the subject area...”*

(Article 16, Higher Education Law of 1998, as cited in Yu et al, 2010)

On the other hand, tertiary vocational education is supposed to:

*“...to equip students with the essential principles and specialized knowledge of the subject area and the basic skills and elementary ability to conduct practical work within the subject area...”*

(Article 16, Higher Education Law of 1998, as cited in Yu et al, 2010)

The essential difference between the two is that bachelor education is research training focused but vocational education is skills training focused.

Postgraduate education consists of master level education and doctoral education. Usually both of the types of education take three years long, but in some occasions for example in the medical field the doctoral education can last longer. As cited from the Higher Education Law, the goal of master level education is:

*“...to equip the students with a strong theoretical foundation, systematic subject knowledge, relevant skills, methods, and knowledge, and abilities to conduct practical work and scientific*

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<sup>3</sup> Diploma and degree: In China, diploma means a certificate issued by an educational institution to testify one has successfully complete a programme, it only implies the graduation from one institution but not implies an academic degree is attained. On contrary, degree means a position awarded by the state when one has successfully completed a programme. It includes Bachelor's, Master's and Doctoral degree. The student graduates from vocational education can only acquire a diploma; however student graduates from bachelor education can acquire both a diploma and a Bachelor's Degree in China.

*research...*”

(Article 16, Higher Education Law of 1998, as cited in Yu et al, 2010)

Doctoral education is supposed to:

*“...to equip students with solid and broad theoretical foundation, systematic and intensive subject knowledge, relevant skills and methods of the discipline, and abilities to independently conduct creative scientific research and practical work...”*

(Article 16, Higher Education Law of 1998, as cited in Yu et al, 2010)

Both of master level education and doctoral education is research-training focused, however, doctoral education is more specialized and higher leveled than master-level education.

### **2.1.2 Types of Chinese Higher Education Institutions**

Higher education in China integrates various forms of institution that award academic degrees or professional certificates. It can be classified according to different criteria. When classified by the governance body, one can distinguish between a national institution (*Bushu Gaoxiao*) and a local/provincial institution (*Shengshu Gaoxiao*). National institutions are governed by the central government and are affiliated with different central ministries such as the Ministry of Education and the Ministry of Foreign Affairs etc. Local/provincial institutions are administered by local province and are affiliated to education department of the respective provincial government. More than 80 percent of the total student population comes from local/provincial institution; they are the major force in Chinese higher education expansion (Yu et al, 2010).

In China institutions can also be classified as public (*Gongban*), private (*Minban*) and independent (*Duli*). Public institutions are run by government, and private are those owned by private entity. Independent institution is an institution that is co-established by a public institution and a private investor. In some manner, it can be considered to

be quasi-private since it has private characteristic but is closely linked to the public institution. Public institutions can enroll both postgraduates and undergraduates; however private and independent institutions cannot offer postgraduate education which is recognized by the government. Another important difference between public and non-public (private and independent) institutions is that the former will receive funding from government but the later will not. Private and independent institutions contribute greatly to satisfy the growing demand for higher education because most of the students, especially in recent years, have been enrolling into these institutions.

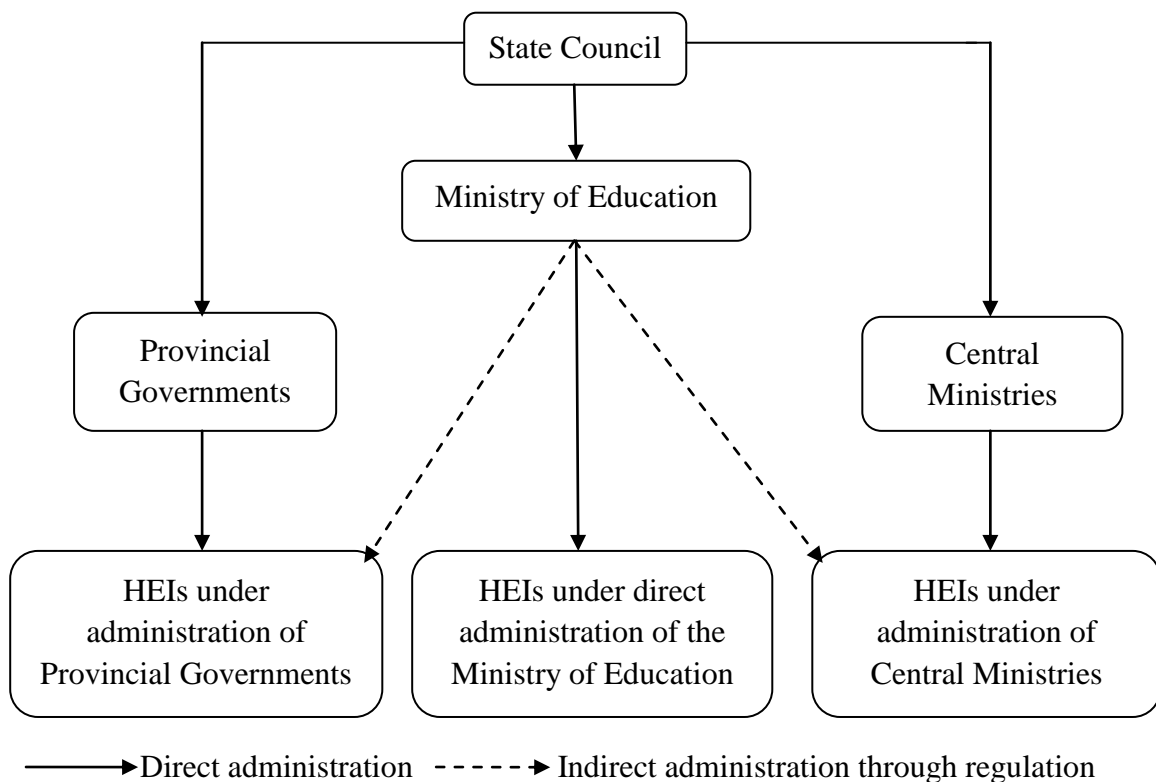
One can also classify institutions by qualification they provide into research institutes, universities, and vocational colleges. Research institutes focus primarily on postgraduate students; universities are open both to postgraduates and undergraduates (although more for bachelor students) who passed the national entrance examination. Vocational colleges mainly train tertiary vocational students that also need to pass the national entrance examination. These types of institutions discussed above are usually called the regular higher education institutions. Those who go into higher education but are not through the national unified admission and taking national entrance exam usually go to institutions called as adult institutions and distance education institutions.

### **2.1.3 Governance of Chinese higher education**

In China, the government manages higher education institutions from the central level and local level. The central government (the State Council and the Ministry of Education) is responsible for the overall administration and general guidance including establishing principles, regulations, policies, funding, and planning. At the local level the education department of each province is the authority that is responsible for governance, funding, appointing the leader of institution and coordinating with national entrance examination. It has been explained that national

institutions (*Bushu Gaoxiao*) are affiliated with central ministries and local/provincial institutions (*Shengshu Gaoxiao*) are affiliated with local governments, they are administered by their affiliated-sections directly. However because the State Council and the Ministry of Education are responsible for the guidance of other central ministries and the provincial governments, therefore national and local institutions are also administrated by the Ministry of Education indirectly. The governance structure is illustrated in Figure 1.

**Figure 1: Higher education administrative system in China**



(Source: Zhou 2006)

The Ministry of Education is one of the central government agencies under the State Council, which is in charge of China's educational undertakings and language work. Its main missions include carrying out strategies, policies, plans, rules, regulations and supervise their implementation; guiding reform, teaching and research; formulating curriculum; financing; evaluating institutions and education programs; teachers and students affairs etc. (MOE, 2009)

#### **2.1.4 Financing of Chinese higher education**

In China, government plays a very important role in funding, although its contributions have reduced gradually. The government's contribution to higher education has decreased from 72.32% to 42.77% in the period from 1994 to 2005 (Kang & Shen, 2008). The public funding allocation mechanism is predominantly input-based which means that allocation is on the basis of norms such as staff salary, building maintenance cost, investment, etc. (Jongbloed, 2000). The government allocates the whole educational budget according to the measurement of various costs of higher education institutions. Students' grant is a part of public funding and the institution is responsible for the management, evaluation, and granting work for the students. Due to higher education expansion the total amount of funding from the government has increased, however the fact is that the proportion of budget allocated in higher education has decreased. On the contrary the contributions of students through tuition fees have increased.

Tuition fee is another important financing source of Chinese higher education. In the period of 1989 and 1997 China was under the so-called "dual track" tuition system under which the universities would enroll free-tuition students according to the regular plan but could also enroll a few of self-financing students out of the plan. However since 1997 all students are required to pay tuition fees for higher education. The tuition fee varies from region to region, from institution to institution, and from discipline to discipline. Institutions located in the eastern (relatively rich) region usually charge higher tuition fees than those located in the western (relatively poor) region, and prestigious institutions charge higher than common institutions, but the differences are not very distinctive. Generally tuition in disciplines such as engineering, medicine, arts, software etc. is higher compared with fields as sociology, education and history etc. The tuition is regulated by the central government and local government directly and the individual institution has no influence. Private

institutions have the right to determine tuition but still need to report to the government and receive approval from authorities (Yu et al, 2010). Although the state pronounces that tuition should not exceed a certain fixed level, it is still a great burden for families. Families have to pay tuition as well as all living costs during their children's schooling. Tuition fees have increased twenty times from 1989 till now and it has reached to over 5000 RMB (around 575 Euros) per academic year (Zhao, 2005).

The public funding and tuition fees are two main income sources of higher education institutions. At the same time the government has highly highlighted on widening the channels of higher education institutions to raise money themselves.

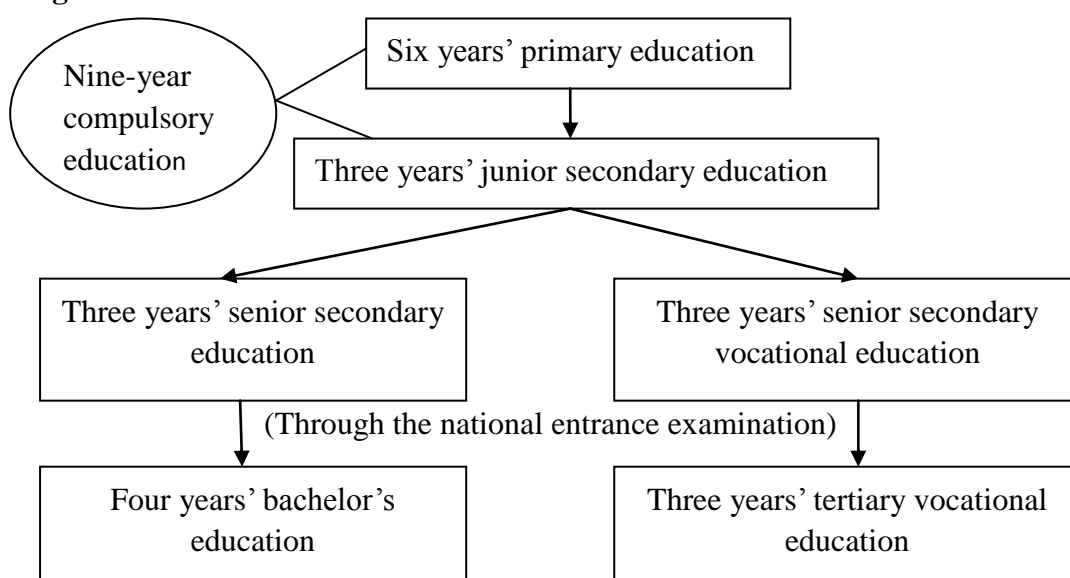
### **2.1.5 Chinese secondary education and the transition to higher education**

In China, the secondary education is divided into two stages, three years' junior secondary education (*Chuzhong*) and three years' senior secondary education (*Gaozhong*). Three years of junior secondary education along with six years of primary education compose the nine-year compulsory education that is completely free of charge. 95% of Chinese people have received the nine-year compulsory education by the year 2009 (Su, 2009). Once nine-year compulsory education is completed a student can choose to continue with senior secondary education or to enter the labor market. Senior secondary vocational education (*Zhongzhuan*) is another option which is parallel to senior secondary education, but the difference is senior secondary education graduates upgrade to bachelor's education (*Benke*) while senior secondary vocational education graduates upgrade to tertiary vocational education (*Zhuanke*). (See Figure 2) There is no pathway upgrading the secondary vocational education graduates to bachelor's education directly. They must upgrade to the tertiary vocational education firstly and then if they want they can try to enter bachelor's education by passing the required exam.



For senior secondary education, students learn basic knowledge in the first year. From the second year students start to choose their study orientation and then are divided into different classes based on their choices. Choices can be made between science (*Like*) and liberal arts (*Wenke*). Except for Chinese, English and mathematics, science students also need to learn physics, chemistry and biology and liberal arts students need to learn history, politics, and geography in the last two years. They will enter different types of national entrance examination finally. They will also apply for different subjects based on their study background (science or liberal arts).

**Figure 2: The structure of education in China**



The national entrance examination (*Gaokao*) is the most common way to access to regular higher education institutions in China. Therefore, a majority of students take it after graduation from senior secondary school. As a result a majority of students of higher education belong to the traditional age cohort 18-22 years old. Some others enter labor market and leave school for several years but later on could follow other channels such as adult examination, self-study examination and distance or online examination access to the adult higher education institutions.

The national entrance exam lasts usually three days and is organized once a year by

the government. Admission procedure is controlled by the state, so individual institutions have no influence. Secondary school students apply for universities as well as majors before or after the exam (this differs from province to province). The exam can be seen as a filter with very intense competition because many students compete for limited seats. The government decides on the exam paper, the enrollment score for each institution, and the enrollment quota for each institution.

For the exam the Ministry of Education will design a national unified exam paper. Some of the provinces<sup>4</sup> also have right to develop their own exam paper based on the national entrance exam syllabus, so they can decide to choose the national unified exam paper or their own exam paper for their examinees. Other provinces who have no right to develop their own exam paper will only take the national unified exam paper for their examinees. Therefore, actually students' records of the exam are not comparable. That's why enrollment standards are different for each province.

The enrollment score for enter to a higher institution varies for students coming from different provinces due to policy support. For example, in 2009 the enrollment score of Beijing University was required as 643 for science students from Beijing but as 855 for science students from Hainan province (BeijingUni, 2009). By deciding enrollment score of each institution, the government divides all higher education institutions into different levels from the priority level to the third level. The higher the level the higher the enrollment score is. Scores set for each level of institution also vary among provinces. Due to this score differences among provinces the "examination migration" phenomenon emerges. It is a phenomenon that student moves to another province where requires lower enrollment score in the national entrance exam. However, it is not common because only rich or influential family may practice it.

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<sup>4</sup> There are 16 provinces that can develop their own entrance exam paper in China, they are: Beijing, Shanghai, Tianjin, Chongqing, Liaoning, Jiangsu, Zhejiang, Anhui, Fujian, Jiangxi, Shandong, Hubei, Hunan, Guangdong, Sichuan and Shaanxi. The rest of provinces need to follow the national exam paper.

Enrollment quotas are determined by central government in order to control expansion. It is influenced by institution's suggestion but the final decision determined by government which the institutions should follow (the adult exam and self-study exam has no such restriction). A phenomenon is that enrollment quota of an institution usually have preference for its local students. It means that higher education institutions have different quotas for students from provinces other than their own, thus the students from their own province will be put in a more advantaged position. For example, Fudan University (located in Shanghai) planned to enroll 590 Shanghai students (FudanUni, 2009a) but only 49 Guangdong province students in 2009 (FudanUni, 2009b). The gap is significant. Normally enrollment quota to local students takes up around 30% of the entire enrolment quota. The prestigious universities are usually located in affluent provinces, so students from these regions are advantaged.

## **2.2 The social, political and economic background for Chinese higher education reform history of the period 1949-2005**

This section is going to introduce the history of reforms in Chinese higher education with the social, political and economic background from 1949 to 2005. The Chinese Communists Party (CCP) won the civil war and established new socialist nation the People's Republic of China (PRC) in 1949. Since then the higher education system underwent many adjustments and shifts which can be divided into three main historical stages (Yu et al, 2010). The first phase is called post-revolution era from 1949 to 1965, the second stage is the "Cultural Revolution" era from 1966 to 1976 and the last phase is the new era from 1977 to now. The illustration will be extended below following the division.

### **2.2.1 Post-revolution Era (1949-1965)**

The politics, economy, society and education were all under reconstruction after new China had just been established. At the beginning of this period, the core strategy of education was following the experience of the Soviet Union that in order to develop a socialist society (Zhou, 2006). Therefore, a Soviet-style education system established and its main characteristic was that the state owed all the institutions with the centralized planning, management and financing. The previous private institutions and missionary schools were clamped down and many new public institutions reestablished such as teachers' universities and comprehensive universities with various disciplines engineering, law, finance, arts, agriculture etc. Moreover, the national entrance examination system under the government's unified planning and operating (Kun, 1961) was introduced and it was completely free for all students. A national job assignment system was operated in a manner that the graduate's job position would be assigned by the government. All social background students could be enrolled in higher education under this system. The number of workers and farmers in higher education grew steadily.

From 1958 to 1960 was the so-called "Great Leap Forward" period when the radicals in the Chinese Communist Party (CCP) idealistically attempted to achieve communism within a short period in China. Higher education was also involved in it and the goal was made as "to universalize higher education in 15 years" (China Education Yearbook 1949-1981, p.234). More universities and colleges were set up both at national level and at provincial level. The number of enrollment also grew rapidly in order to meet productive demand. Data show that higher education institutions increased from about 200 to over 1000 between 1957 and 1960, and the enrollment amounts increased from 0.4 million to almost 1 million during the same period (Yu et al, 2010). However, the campaign was soon recognized as based on wrong strategy because of shrinkage in economy during the period. The irrational

goal and plan didn't last long until 1960 the great natural disaster emerged cross the country. The Party started to control the expansion in higher education and stopped the establishment of institutions. The number of the institutions had also cut into around 400 till 1963 and from 1965 the system began to focus on the quality of higher education as well (Min, 2004). During this period, the social background that one's class origins become one of the factors could influence access to higher education. The proportion of workers and peasants in higher education is high. However, because the expansion exceeded the labor market demands in urban forcing some of the graduates coming from worker and farmer families to go back to rural life after graduation.

In addition, the population migration was not strictly controlled by the government at the early stage and people could flow from rural to urban with the purpose of education or occupation. However, the government decided to restrain the outflow of rural people in the First Session of the National People's Congress Standing Committee in 1958, which represented that the urban-rural household registration system was established in China (Zhang, 2008). People were identified as rural status and urban status, and were treated differently in terms of resource distribution and policy support under this system.

### **2.2.2 “Cultural Revolution” Era (1966-1976)**

The “Cultural revolution” is a ten-year's long dramatic political movement initiated by Chairman Mao Zedong in 1966 in order to wipe out the bourgeoisie element in the socialist society. It is a bottom-up revolution that against with the revisionism and capitalism. The movement was a huge disaster to Chinese economy, culture, politics, society as well as education, and the damage lasted for decades (Deng and Treiman, 1997). Economic development was at a standstill for nearly 10 years during the movement, and education system almost devastated.

The national entrance examination for higher education was abolished during the whole period. Almost all secondary level institutions were closed down from 1966 to 1968 and universities were shut down until 1972. The enrollment work also discontinued for five years from 1966 to 1971. After 1972 the recruitment work was recovered but not in the form of normal entrance exam because another new kind of institution the “worker-peasant-soldier” colleges (*Gong-nong-bing Daxue*) were introduced. The college exclusively enrolled workers, peasants and soldiers, and the admission criteria were based on recommendation and class background<sup>5</sup> rather than the exam or achievement (Shirk, 1982). Children who had rural status under the rural-urban household registration system and whose family origin was worker were strongly recommended. However, children who came from the previous wealthy families were rejected and discriminated in university admission. That’s because as the movements expanding and the chaos spreading, all high status groups and intelligentsia origins were seen as “bad” class background and were attacked in order to avoid them to take the capitalist road (Deng and Treiman, 1997). However, the workers, peasants and soldiers who went to the colleges actually had very little educational foundation which was only equivalent to junior middle school. Therefore, strictly speaking the “worker-peasant-soldier” college could not be considered as higher educational level. The “worker-peasant-soldier” college only educated students three subjects, politics (Mao Zedong Thought), operational skills, and military physical education. The establishment of the college aimed to highlight the role of proletariat in China and provide educational opportunities for them.

The national entrance examination system was reestablished firstly in high schools and the exam to higher education was resumed by the year 1977 (Unger, 1982). The

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<sup>5</sup> Class: during the Cultural Revolution period, class is only classified into three levels. (1) Good class origins (Jieji Chengfen Haode): such as worker families and poor and lower-middle peasant families belong to this class. (2) Middle-class origins (Yiban Chengfen) and (3) Bad class origins (Jieji Chengfen Buhaode): such like families of former capitalist, families of rightist, rich peasant families, and pre-liberation landlord families belong to this class. (Deng & Treiman, 1997)

people from low-level social background (workers and soldiers) and people from rural background (peasants) got a little educational benefit from the movement. However, the true outcome was that due to “Cultural Revolution” China had lost the education of one generation (Tsang, 2000).

### **2.2.3 The New Era (1977-2005)**

Since 1977 the new leadership of the CCP started to reform the Chinese economy and society. Higher education system also began to restore. The reestablishment of the national entrance exam in 1977 was a very critical and significant decision. Students were very excited on getting the opportunity to access to higher education again through entrance exam. There were more than 5.7 million applicants entered the first national entrance exam in 1977, although only around 0.3 million students were admitted finally (Liu, 2007).

The year of 1978 was the very significant year for China when the government launched the “Reform and Open-door” (*Gaige Kaifang*) policy. Since then China opened her door to the outside world and education opened for modernization. Both the number of institutions and enrollments increased. The number of institutions saw a double increase from 598 in 1978 to 1016 in 1985 and the number of enrollment increased from 0.4 million to 0.6 million during the same period (China Statistical Yearbook, 2005). Thousands of students were sent to abroad by the government to study western technologies and foreign students were also allowed to come to China. The government gave public institutions much autonomy and non-state-run institutions emerged again. The higher education system established in this period is the original form of the system applied today. In addition, the “Reform and Open-door” policy was biased toward urban area and the governmental policy support to urban increased the development gap between urban and rural in China.

From 1985 to 1998 the government put forward many reform policies in higher education, the main characteristics of them were marketisation, decentralization and privatization. The dual system of tuition fee carried out in 1989; thus, except for enrolling the regular free-tuition students it was also allowed to enroll a small proportion of self-financing students. Along with the introduction of socialist market economy that replaced previous planning economy since 1993, higher education was also required to adapt to the market economy. The private institutions were encouraged to develop by the government, and the government also encouraged the public institutions to explore more sources of funding from the society. Therefore, since 1997 all higher education institutions began to charge fees to all students, and tuition fee became a main funding source of institutions. The reform transformed higher education institutions to become more independent from the government in governance, financing, teaching and research activities in this period.

Chinese higher education developed steadily in the new era and turned into a new period in 1999 when massive expansion happened. In this year the government decided to increase the enrollment of university dramatically and aimed to achieve 15% participation rate by the year 2010. The expansion proposed by the government was actually an economic policy with the intentions to stimulate economic development as well as to keep the students in the universities. It could delay student's entry to the labor market, because the unemployment problem was serious at that time caused by the 1997 Asia Financial Crisis (Bai, 2006). Unexpectedly, this goal was achieved fulfilled ahead of schedule by the year 2002. Thus China has stepped into the process of mass higher education from elite higher education (Trow, 1973). The role of higher education was more than just to cultivate elites for the government, but also to produce skilled labors for the market. At this time, there were more and more universities and professional colleges established and meanwhile more and more disciplines were opened.

The expansion has mainly focused on quantitative growing, however it has not



considered about the equality issue, or addressed the “expanded access for whom” question (Yu et al, 2010). Along with the rapid expansion inequality problems have emerged gradually. The rural or urban difference, provincial difference, class difference, gender difference, and racial difference become primary factors that could impact inequality in access to higher education in China.

The Chinese higher education system has experienced three phases: from its establishment in new China to it’s totally destroyed in Cultural Revolution and then to its fast development after “Reform and Open-door” Policy. What are the patterns of factors impact inequality in access to higher education of different phases in China? This study intends to answer the question by analyzing three cohorts of Chinese citizens representing the three historical phases respectively when they should attain higher education.

# **Chapter 3 Conceptual Framework and Theoretical Foundation**

This chapter explains equality and educational equality as the key concepts of this study. It also discusses the differences between social inequality and educational inequality. Finally, it elaborates on the theoretical foundation of this study with discussing the three forms of capital, Maximally Maintained Inequality hypothesis and Gini inequality index.

## **3.1 Key concepts--equality and educational equality**

The term of equality has been discussed from different perspectives. Equality is associated with the democratic ideal of social justice demands equality of results, and it usually implies sameness in treatment by asserting the fundamental or natural equality of all persons (Corson, 2001). Equality can be used as a synonym for justice, therefore according to John Rawls' theory of justice, equality can be understood as "each person is to have an equal right to the most extensive scheme of equal basic liberties compatible with a similar scheme of liberties for others" (John, 1999, p.53). Equality can be considered as the main basis of distributive justice (Oscar, 2007) and "is concerned with the distribution of the conditions and goods which affect individual well-being" (Morton, 1975, p.137). In this study equality is defined as everyone should be treated same in the process of distribution in the society.

In light of the definition of equality, the educational equality then can be expressed as that everyone has an equal right or opportunity to enjoy education no matter what one's age, gender, region, race, and social origins etc. in the society. The OECD (2007) interprets equality in education from two dimensions. The first is fairness, which means an individual's personal and social factors such as gender,

socio-economic status or ethnic origin should not become a barrier to achieving educational potential. The second is inclusion, which implies a basic minimum standard of education for all, for example that everyone should be able to read, write and learn. The European Commission gives a specific definition to the equitable educational system. They define it as that socio-economic background and other factors that may lead to educational disadvantage should not affect the outcomes of education, and stress that “treatment should be differentiated according to individuals’ specific learning needs” (European Commission 2006, in Jan et al, 2010, p.9).

Educational equality has been expanded to cover three main aspects: access, progress and completion. Equality of access implies the equal chance to go into one given level of education, equality of progress means students should be equally treated that fully use one’s potential capacities within a studying period, and equality of completion refers to the outcomes of education such as the knowledge, competencies, skills mastered and qualification and employment achieved. In this respect, the OECD (2008) expands the equitable educational systems as that access to, participation in and outcomes of education should only be based on individuals’ innate ability and study effort but not on the results of social factors such as socio-economic status, gender, ethnic origin, immigrant status, place of residence, age, or disability. It means a school failure that is caused by the external reasons an individual is hardly to change can be regarded as inequitable education. However, when the school failure is only due to the individual has no study ability or he/she studies not hard enough or even he/she subjectively wishes to quit education, then this is no relevant with educational equality.

This thesis aims to study the equality issue on higher level of education which is carried out after the completion of senior secondary education as defined in China. According to the data that have been collected, it has only involved the highest level of education completed by the respondents, but no data about their study process and study outcomes. Therefore, this paper will be only focused on the equality of access

and expect to see what is the level of inequality in China, how the socio-economic backgrounds influence children in access to higher education, and how it has changed during the last fifty-six years.

## **3.2 Social and educational inequality**

In this study, the social inequality is viewed as a wider term that contains the term of educational inequality, or educational inequality is an important part of social inequality. Therefore, it is necessary to have a brief discussion on the theories and differences between social inequality and educational inequality in this section. Actually, the study of educational inequality is within the field of sociology of education and the contemporary social stratification theory is dominated in the field of sociology of education. There are two main approaches that structural-functional approach and conflict approach debated by scholars on the interpretation of the contemporary social stratification theory.

According to Jeffrey “the structural-functionalist see the social opportunity structure as accommodating an essentially free flow of talent, and the inequality thus generated as a ‘functional necessity’ in order to encourage those who possess ability to take the time and energy to train for important and demanding occupations.” (Jeffrey, 1981, p.72). Education then supplies the opportunities of learning technical and social skills to students thus they will exchange “unequal, nonetheless fair rewards” (Jeffrey 1981, p.72) in the labor market. In this theory occupation status is the critical factor that determines social classes. Functionalists assume that the expansion of higher education can promote the equal opportunity for social mobility, since higher education can create the opportunities for people to flow from a wide social base to different status groups.

In contrast, the conflict theory stresses the effect of conflicts in the process of forming

inequality. It considers that apparently there is equality of opportunity, but actually it is the powerful groups that manipulate the school system as well as the labor market to form an unjust social order. As Jeffrey said “if inequalities, then, is in any way functional, it is only for those who hold hegemony” (Jeffrey 1981, p.72). Therefore, the expansion of higher education cannot change the situation that privileged people get better and more resources and the function of the expansion is to reproduce class differences (Bourdieu & Passeron, 1977). Raftery and Hout’s (1993) hypothesis of Maximally Maintained Inequality also illustrates this conflict in education. It indicates that only when the privileged groups have got satisfied with a certain level of education, the further expansion of that level of education would reduce inequality.

Social inequality and educational inequality are complementary concepts with close relationship. Educational inequality is a manifestation of social inequality in the educational field. Educational inequality would aggravate social inequality because education is seen as an instrument to improve social and economic development.

### **3.3 Theoretical Foundation**

This section will discuss the three forms of capital, the maximally maintained inequality hypothesis and the inequality index as the theoretical framework of this study.

#### **3.3.1 Three forms of capital**

The educational inequality could be studied from different perspectives and the study of how family socio-economic background influence educational attainment is an important one. Some sociological theories have been introduced to explain the relationship between family background and educational inequalities such as social capitals. The three forms of capital are interpreted next along with their connection to

this study.

Bourdieu (1986) proposed three forms of capital to express how these different capitals cause various forms of inequalities and how the inequalities transfer from old generation to younger generation. The first capital he mentions is the economic capital which refers to the monetary condition. It means how much money or how much profits and possessions which could be exchanged into money directly one person owns. The second is cultural capital which is most reflected in the form of educational qualifications such as the highest level of education one attains and the professional certificates one gets. The third one is called social capital which is connected with group membership and social networks and may be “institutionalized in the form of a title of nobility” (Bourdieu 1986, p.47). The uneven distribution of these forms of capital determines the positions and possibilities of one actor in society and lead to social inequalities such as educational inequalities among classes.

Economic capital is the financial situation and can be measured by money. Economic capital is convertible into cultural capital and social capital on certain conditions and vice versa. For example, the rich family may easier support their children to receive higher education which is one kind of conversion from economic capital to cultural capital. On the other hand, the people who have received higher education may find a better job easier but not easy to lose the job which is the conversion from cultural capital to economic capital. In this study, the region of origin that people come from urban area or rural area can be used to express the economic capital of a family in China. The reason for that is people from rural area are poorer than urban area people and the average income of them is much lower than urban people as well. For example, in the year 2007 the per capita annual income of rural households was 4140.4 Yuan (about 447 Euros) with the Engel’s Coefficient<sup>6</sup> of 43.1%, however in the urban area the per capita annual income was 13785.8 Yuan (about 1489 Euros)

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<sup>6</sup> Engel’s Coefficient is the proportion of expenditure on food to the consumption expenditure which is a reflection of the living standard. A higher proportion indicates a poorer standard of living.

with the Engel's Coefficient of 36.3% (China Statistical Yearbook, 2008). Therefore, the economic differences across urban and rural origin do exist in China.

Cultural capital is an abstract concept which can be understood as the knowledge, skills, experience, certificate, diploma, achievements, values etc. an individual may obtain in his life. Bourdieu (1986) discusses the educational inequality issue under the human capital theory and cultural capital theory. He argues that human capital theory is focused on explaining the relationship between educational investment and economic investment in the economic field. In other words it is about economic investment and economic return. However it ignores the educational strategies and reproduction strategies. It is unaware the fact that academic investment is also an investment of time and cultural capital, and not only economic capital. For example, a well-educated father will make his children to receive the level of education not lower than his; this is the reproduction progress of education. Moreover, one person's educational behavior actually depends on the cultural capital inherited from his family. Here an example could be a good explanation, a child whose father is a doctor is able to receive lots of knowledge in medical field from young age under the influence of his father. Probably the child will study medical science subject in the university and become a doctor as well in the future. In this case the child's educational behavior is affected by the cultural capital from the family. As a result a good cultural circumstance may influence family member's thought, attitude and manner and then lead to a positive motivation and aspiration to education of their children. The family's cultural capital depends on parental education (Peng & Treiman, 1993), thus, the variable of each parent's education is the main indicator of cultural capital in this study.

Social capital is the interpersonal resource existing in social network and social groups. The group provides its membership the "backing of the collectivity-owned capital" (Bourdieu, 1986, p.51). The connection between members is based on cognition and recognition or trust (Putnam, 1993). Therefore, the two characteristics

of social capital are: (1) it is a resource that is connected with group membership and social networks and (2) it is based on mutual recognition (Siisiainen, 2000; Putnam, 1993; Bourdieu, 1986). The relationship in the group is produced as investment strategies that aim at establishing material or symbolic profits such as social position in a variety of different fields. A family who has high social capital therefore usually has a high social status in society that may produce more chances and advantages to their children in education. Actually, the education of parents can indicate social capital to a certain extent. Just like “birds of a feather flock together” people in a group usually have the similar degree of education or economic background. In other words, they are usually in the same social level and share the similar values, norms and attitudes etc.

In summary, the inequality in access to higher education can therefore be strongly affected by economic, cultural and social situation of a family such as educational level of parents and region of origin which have been discussed above. Studying the influence of these capitals in access to higher education could find out the level of educational inequality of a society. According to the data this study will be only based on the factors of gender, region, and the educational level of parents. The variable of region of origin could be seen as an indicator of economic capital, and the variable of parents’ education could be viewed as an indicator of cultural capital and social capital in this study.

### **3.3.2 Hypothesis — Maximally Maintained Inequality**

Maximally Maintained Inequality (MMI) is often used as a working hypothesis in research into the effect of social background on educational inequality. Raftery and Hout (1993) proposed the hypothesis of MMI through studying the expansion and reform in Irish education. It tries to explain why expansion and national reform could not reduce educational inequalities among classes and how social origins affect



educational outcomes. The MMI hypothesis indicates that the transition rates, which means the rates of students upgrade from one level of education to an upper level of education, is closely associated with social origins, and transition rates will not increase for all social origins unless the expansion beyond the demand. In other words, only when the demand for a given level of education is satisfied for the privileged groups the expansion could reduce inequalities among classes and the effect of social background could decline. Otherwise the educational inequalities among classes are maintained.

Although Raftery and Hout (1993) proposed the MMI hypothesis through studying the secondary education expansion in Ireland, the thesis can be extended into any level of education. It also fits for the level of higher education. Therefore, at higher educational level, the persistent inequality hypothesis can indicate the impacts of socio-economic background on the transition from secondary schools to universities. It is worthy to note that this kind of inequality maybe accumulated from the previous level of education, for example one would be advantaged in access to higher education because he/she has accessed to a better school or has got more excellent achievement in the secondary education level. However, in this study the MMI hypothesis is just used to analyze the relationship between higher educational expansion and inequality, which tries to analyze whether the quantitative growth of higher education lead to a decrease in inequality of access (in term of Gini index) in China context. It is from a different perspective to see whether the persistent inequality hypothesis fits Chinese situation rather than to calculate the transition rate from secondary education to higher education.

### **3.3.3 Indicator — Gini inequality index**

Gini index is a measure of the inequality by means of a ratio analysis. It is commonly used to assess income inequalities of families in a country. Although it is most popular

in economics, it can in theory be applied in any field of science such as education (Wikipedia, 2011). It can be expressed as a percentage ranging between 0 and 100. A value of 0 expresses total equality and a value of 100 expresses maximal inequality. Gini index is an easy way to compare inequality across different groups.

This study will use a statistical model that Receiver Operating Characteristics (ROC) curve to calculate inequality index in higher education which is corresponded to the Gini index. The ROC curve is a very good way to analyze the odds ratios of higher education attainment through the impacts of social factors. It can obtain the result that how much ratio the higher education attainment is influenced by the social factors like gender, region of origin and parents' education in this study. Consequently, it gets the inequality index through a calculation. The method of how the inequality index is calculated is presented in next Chapter 4.

The ROC curve is used when the dependent variable is dichotomous, thus it is good for this study with a dichotomous dependent variable that whether or not one attains higher education. Furthermore, the Gini index that calculated through ROC curve is comparable which is also good for this study with a cohort comparison. A similar study called "Who gets a degree? Access to tertiary education in Europe 1950--2009" (Jan et al, 2010), which is the fourth stage of a project studying inequality in access to higher and tertiary education in European countries, also adopts the ROC curve method and Gini index to analyze inequality issue.

# Chapter 4 Data and Methodology

The purposes of this chapter are to a) describe the research design, b) introduce the data sources and discuss about the variables, c) explain the statistical analysis methods adopted by this study, d) interpret the issues of reliability and validity, and e) present the study limitation.

## 4.1 Research design

The present study is an analysis of how do socio-economic background impact inequality in access to higher education in China and of the relationship between educational expansion and educational inequality. The study is based on the official data from the Chinese General Social Survey in 2005 (CGSS2005). Although the CGSS2005 is not primarily focused on education, yet it contains questions what can be well used for analyzing inequality in approach to higher education and the influence of socio-economic background. Data are chosen from CGSS2005 as variables include the respondents' highest education attainment, gender, region of origin and parents' educational level when the respondent is 14 years old. These factors can reflect the respondents' socio-economic situation which has been discussed in Chapter 3. Moreover, in order to compare and analyze the data the official statistical data that come from China Statistical Yearbook (1981, 1990, 1999, 2001, 2005, 2006 and 2008) are also used.

The study adopts a cross-sectional research design by analyzing the entire sample (CGSS2005) and discussing the relationship between variables. Meanwhile, the study also adopts a longitudinal research design by dividing the sample into three cohorts and comparing the changes among different historical periods. In a word, the study is a quantitative one that includes both a cross-sectional focus and a longitudinal focus.

## 4.2 Data sources

Data used in this study come from the Chinese General Social Survey (CGSS). The CGSS is the first nationwide, comprehensive and large-scale social survey in China. The Faculty of Sociology of People's University of China and the Research Center of Hong Kong University of Science and Technology launched the project in 2003. Since then the survey is organized every year until now. The aim of the survey is to study the significant social issues and the tendency of social transitions through collecting the data about Chinese people and Chinese social problems. CGSS is also a member of the International Social Survey Program (ISSP) and is responsible for the Chinese social surveys. All the data collected from the surveys are freely released on the website of Chinese Social Survey Open Database (CSSOD)<sup>7</sup> that is also established by CGSS. Data that are released on internet include the questionnaire, raw dataset (in SPSS), interviewer manual, codebook, and sampling instruction.

Besides collecting data of respondent's personal information the survey would be focused on different themes each year. It means the questionnaires have different modules that are connected to various social or private issues every year. The contents of the questionnaire of 2005 include the following parts: resident information (like their gender, date of birth, region of origin, occupation etc.); personal information (like marriage, education, occupation, income etc.); family backgrounds (such as parents' education and occupation, housing, family income etc.); physical and psychological health (like physical condition, mental condition); economic attitude and behavior (like social status, social behavior); community life (like the governance of community, activities in community) and rural area governance (like land contracts, agricultural tax reform, rural election etc.). Some of the data collected in during the CGSS2005 survey reflect the respondents' socio-economic background hence this dataset is chosen for the current study.

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<sup>7</sup> China Social Survey Open Database refers to website [www.cssod.org](http://www.cssod.org)

The sampling of CGSS2005 is based on the data of Chinese Fifth Census which was carried out in 2000. A nationally representative sample of size 10,000 is selected by using stratified random sampling method that includes both urban and rural areas of China. The five strata of the sampling frame are a) the three municipalities (Beijing, Shanghai, and Tianjin); b) provincial capital cities; c) eastern region; d) middle region; and e) western region. Therefore, the sampling process experiences four main steps. Step (1): ‘district’ is the primary sampling unit in this stage and 125 districts are selected around China. Step (2): ‘town’ is the second sampling unit in this step and 500 towns are selected among the 125 chosen districts. It means that 4 towns are selected in each district. Step (3): ‘neighborhood committee’ is the third sampling unit and 1000 neighborhood committees are selected among the 500 chosen towns. It means that 2 neighborhood committees are selected in each town. Step (4): ‘family’ is the final unit and 10,000 individual families are selected among the 1000 chosen neighborhood committees. It means that 10 families are selected in each neighborhood committees. Finally one adult family member 18 years and above is chosen from each family to answer the questionnaire. Table 1 below shows the distribution of sample in five strata. The ratio between urban sample and rural sample is around 5.9:4.1. The ratio between eastern, middle, and western sample is around 4:5:3.

The data obtained from CGSS2005 used for this study include the personal information and socio-economic background information of the respondents:

- (1) *respondent’s date of birth*, which comes from the ‘Resident Information’ section of the questionnaire;
- (2) *respondent’s gender*, which comes from the ‘Resident Information’ section of the questionnaire;
- (3) *respondent’s region of origin*, which comes from the ‘Resident Information’ section of the questionnaire;
- (4) *respondent’s attained highest education*, which is from the ‘Personal Information’ section of the questionnaire;

- (5) *father's highest educational level* when the respondent was 14 years old, which is from the 'Family Backgrounds' section of the questionnaire;
- (6) *mother's highest educational level* when the respondent was 14 years old, which is from the 'Family Backgrounds' section of the questionnaire.

**Table 1: The distribution of sample in five strata**

Stratum	Primary unit (District)	Secondary unit (Town)	Tertiary unit (Neighborhood Committee )	Quaternary unit (Family)
Municipalities	15	$15*4=60$	$60*2=120$	$120*10=1200$
Capital cities	16	$16*4=64$	$64*2=128$	$128*10=1280$
Eastern region	30	$30*4=120$	$120*2=240$	$240*10=2400$
Middle region	42	$42*4=168$	$168*2=336$	$336*10=3360$
Western region	22	$22*4=88$	$88*2=176$	$176*10=1760$
Total	125	500	1000	10000

(The figures represent number of unites making the sample.)

The raw data cannot be used directly in this study and need to be adjusted. The following section will elaborate on recoding process of the variables.

## 4.3 Variables

### 4.3.1 Defining variables and their recoding

In this study the dependent variable is respondent's attainment of higher education. The independent variables are characteristics of socio-economic background of the respondent that are gender, region of origin, and father and mother's educational level.

The dependent variable of whether a respondent accesses to higher education is

presented from the question “The highest level of education you have attained was...?” in the questionnaire. However the original answers are classified into 23 categories that are: 1) no education; 2) self-study; 3)—8) primary education (1 to 6 years); 9)—11) junior secondary education (1 to 3 years); 12)—14) senior secondary education (1 to 3 years); 15)—16) secondary vocational education; 17)—18) tertiary vocational education (full-time and not full-time); 19)—20) bachelor education (full-time and not full-time); 21)—22) master education or above (domestic study and aboard study); and 23) others. However, in this study this variable is recoded into two types: access to higher education and not access to higher education. The former is coded as value 1 and the later is coded as value 0. According to the definition to higher education in China respondents who reported categories from 1 to 16 are coded as “0-not access to higher education” and those who reported categories between 17 and 22 are coded as “1-access to higher education”. The last one category 23 “others” is coded as missing value. Therefore, the type of dependent variable is dichotomous.

For the four independent variables, first of all, gender is coded as 1-male and 2-female in the raw data, however in this study they are recoded as 0-female and 1-male. Therefore it is a dichotomous variable. Secondly, region of origin has four categories in raw data: 1) permanent urban resident; 2) temporary urban resident; 3) rural resident; and 4) others. Both category 2 and category 4 are recoded as missing value. Because from option 2 it is very difficult to know where the original region does the respondent come from and actually the ‘temporary urban resident’ policy has been abolished since 2000 in China. Moreover, the two options only have very few of respondents 3.5% and 0.3% respectively. Finally region of origin is recoded as 1-urban and 0-rural. It is also a dichotomous variable. Thirdly, the father’s educational level can be expressed from the data “the highest educational level your father had achieved when you were 14 years old” and the answers include: 1) no education; 2) primary education; 3) junior secondary education; 4) senior secondary education; 5)—6) secondary vocational education 7)—8) tertiary vocational education (full-time and not full-time); 9)—10) bachelor education (full-time and not full-time); 11)

master education and above; 12) home schools; 13) others; 14) not applicable; 15) don't answer; 16) don't know. Category 12 is not a type of regular education and Category 13 to 16 could not be classified, so all these five categories are recoded as missing value. They occupy 7.9% of the whole. Lastly, mother's educational level is the same situation with the father's mentioned above and missing values here take up 3.8%. Both father's and mother's educational level are ordinal variables.

### 4.3.2 Transposing age cohorts into historical periods

The study has summarized three historical periods (in chapter 2.2) according to the development of Chinese higher education; they are post-revolution era (1949-1965), Cultural Revolution era (1966-1976), and the new era (1977-2005). The groups this study is going to compare are therefore divided paralleled with these eras into three. It distributes the sample into three different cohorts based on the year when respondents are 18 years old. Many countries include China set the legal age of attaining higher education as 18 to 22, although the age limitation has become wider under the influence of mass higher education and lifelong learning (Qiao, 2009). This study will choose 18 as the age children should attain higher education. Therefore, the original data date of birth needs to be added 18 to get the year when respondent should go to university, and then they are categorized into three groups according to which era the year belong to. Table 2 particularly shows how to transpose the age cohorts into historical periods.

**Table 2: Transposing age cohorts into historical periods**

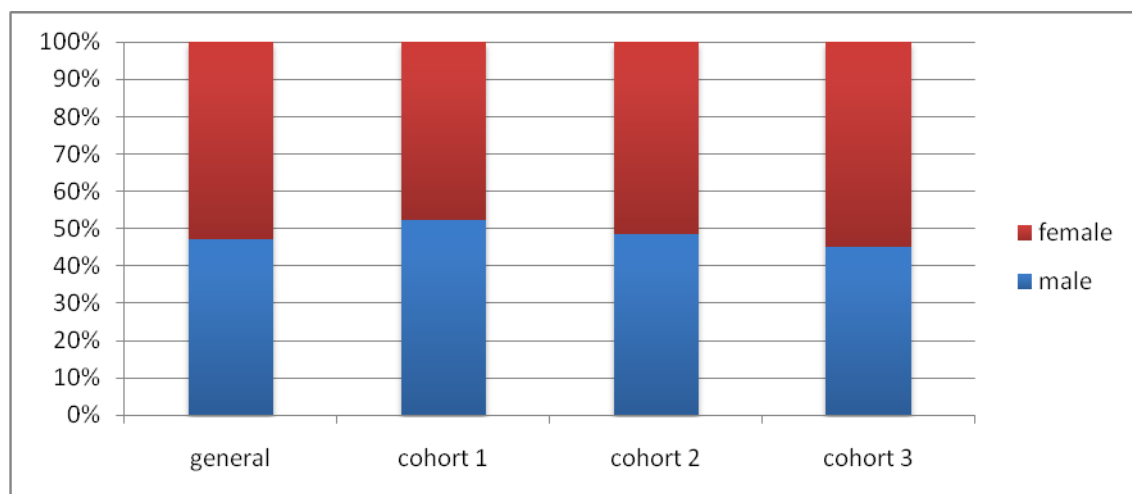
Cohort	Date of birth (year)	Access to HE when 18 years old (year)	In which era of China's HE history	Sample Size
1	1931-1947	1949-1965	Post-revolution Era	1869
2	1948-1958	1966-1976	“Cultural Revolution” Era	2328
3	1959-1987	1977-2005	The New Era	5897



### 4.3.3 Distribution of variables among sample

For the independent variable of gender, male account for 47.2% and female account for 52.8% which are approximate equal among the entire sample. Men account for 52.4% in cohort 1 which is the only group that men are more than women. Men take up 48.4% in cohort 2 and account for 45.1% in cohort 3 (see Figure 3).

**Figure 3: The distribution of male and female in overall and cohort**

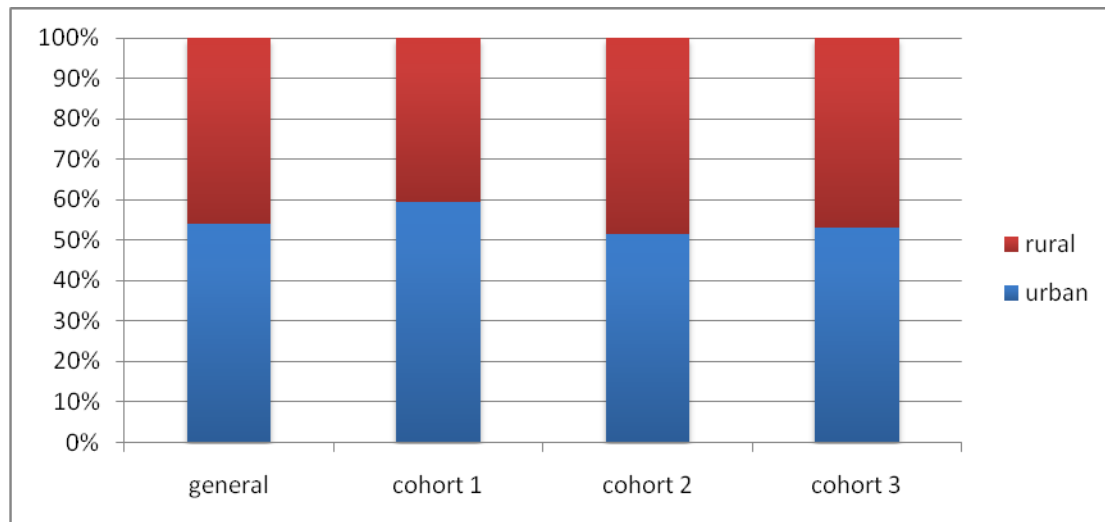


For the independent variable of region of origin, those who are from urban area account for 53.9% whereas 46.1% of them are from rural area among the sample. The proportion of people comes from urban area is 59.5%, 51.6% and 53.1% for each cohort respectively (see Figure 4).

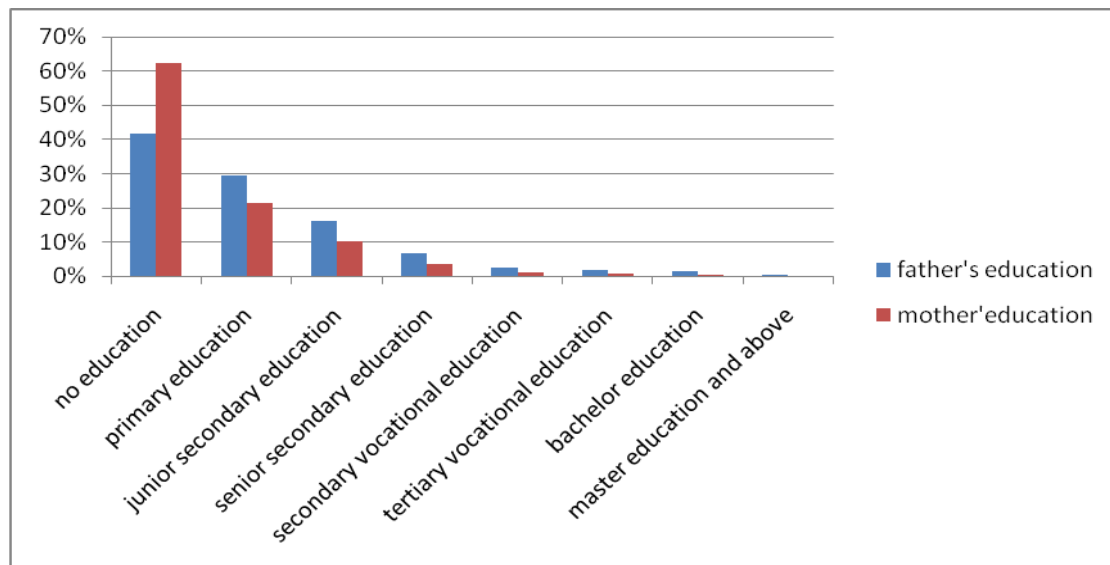
For the independent variable of parents' educational level, fathers who have no education account for 41.7%, while mothers who have no education take up 62.4% that is higher than fathers. Fathers whose highest education is primary education account for 29.5% and this figure is 21.5% for mothers. The attainment rate for different levels of education decreases gradually for both father and mother along with the upgrade of educational level. At the higher educational level, there are only

3.4% of fathers have attained it and only 1.2% of mothers have attained it. The phenomenon is that fathers' educational level is always higher than mothers (see Figure 5). The changing tendency of father and mother's highest educational level for each cohort is similar with the general situation.

**Figure 4: The distribution of urban and rural origin in overall and cohort**



**Figure 5: The distribution of father and mother's educational level in overall**



## 4.4 Statistical analysis methods

The study adopts a quantitative research method and uses the statistical analysis methods of descriptive statistics, bivariate analysis and multivariate analysis. All statistical analyses are conducted using the software SPSS version 17.0.

In this study the type of dependent variable is dichotomous. Two independent variables of gender and region of origin are dichotomous. Two independent variables of father and mother's educational level are ordinal. According to Bryman (2008) the phi coefficient should be calculated for correlation between two dichotomous variables. Therefore, this study uses phi coefficient to measure the correlation between region of origin and higher education attainment and the correlation between gender and higher education attainment. Moreover, the Spearman's rho is used for two ordinal variables, but is also used when one variable is ordinal and the other is dichotomous (Bryman, 2008), thus, the Spearman's rho coefficient is used to measure the correlation between parental educational level and higher education attainment. Both phi coefficient and Spearman's rho result in a computed value that varies between 0 and 1. The value could indicate the strength of a relationship that the closer it is to 1 the stronger the relationship and the closer it is to 0 the weaker the relationship. The value could be either positive or negative which indicate the direction of a relationship. Furthermore, the study uses multivariate statistics method to analyze inequality degree by adopting ROC (Receiver Operating Characteristics) curve and the Gini index.

## **4.5 The calculation of Gini index**

This study will use the Gini index as the indicator to measure the level of inequality in access to higher education in China. By doing so the so-called ROC curve is adopted. The following paragraph will explain the progress of getting the Gini index through ROC curve.

The ROC curve can show the correct prediction (indicated by the vertical axis called

sensitivity) and incorrect prediction (indicated by the horizontal axis called 1-specificity) of respondents' attainment of higher education. The value of AUC (Area Under the Curve) shows the quality of the model. Therefore, the value of AUC assesses the intensity of the influence of the independent variables (gender, region of origin, and parents' education), and actually expresses the level of inequality in access to higher education. The higher value the AUC gives, the stronger influence the independent variables have on attainment of higher education, implying the higher level of the educational inequality. The final inequality index is corresponded to the Gini index and the relation is shown below (Jan et al, 2010). The index assumes a value between 0 and 100 with higher values implying the higher level of educational inequality.

$$\text{Inequality Index} = (2\text{AUC} - 1) * 100 = \text{Gini Index}$$

## 4.6 Reliability and validity issues

Reliability refers to the question of “whether the results of a study are repeatable” or the issue of “consistency of measures” (Bryman 2008, p.31 & p.149). It is particularly relevant in connection with quantitative research and thus needs to be considered in this study. As was explained in section 4.2, the data come from an official social survey CGSS that are second-hand data. The survey is organized every year using the same approach by the same organizations. The instruction and report from CGSS2005 explain the methods of carrying out the survey, statistical methods and the procedure of research design, questionnaire design, sampling, questionnaire distribution and respond, and data processing. Collected data are measured and coded in SPSS by the staff from CGSS within two years and the final data are published on the website after the work. Therefore, the measure of the social survey is reliant. However, some problems still exist and may diminish reliability. For example, the sampling report indicates that the sample size is 10,000, but the final sample size is 10,372. Thus, the

interviewers may not follow the instruction strictly or the family is chosen to be included in the sample may not be entirely random as it is supposed to. In addition, the sampling doesn't follow the actual population ratio between urban and rural. The ratio between urban sample and rural sample is 59:41; however the actual population ratio between them is 43:57 (China Statistical Yearbook, 2006). When the data are about the description of objective facts, the measure outcomes are usually consistent and stable. Gender, region and educational attainment are all about objective facts but not about one's attitudes or opinions that may be influenced or changed. Therefore, the measure results are repeatable. From this perspective, the measure of this study and the data has reliability.

According to Kleven (2007) validity has four types that are construct validity, statistical validity, internal validity and external validity. Firstly, construct validity is about the "correspondence between a theoretically defined construct and the indicators representing the construct in empirical research" (Kleven, 2007, p.226). In this study Bourdieu's three forms of capital, which assumes different socio-economic backgrounds may lead to social or educational inequality, is adopted as the theoretical foundation. In order to test this assumption, the study selects data like gender, region, and parental educational attainment as the indicators of socio-economic background. The study will analyze how these indicators as independent variables work on the dependent variable of higher education attainment. Thereby it will find out whether these indicators influence higher education inequality as Bourdieu assumes. Region of origin is an indicator of economic capital; parental educational level is an indicator of cultural capital for this study these have been discussed in chapter 3.3.1. The problem is social capital cannot be well expressed in this study that may influence the construct validity of the study. However this study will utilize gender as an indicator to expand the analysis. Moreover, it had been mentioned in reliability issue that the random measurement error will diminish reliability in this study; however, according to Kleven (2007) this kind of error will also reduce the construct validity.

Secondly, statistical validity is about “the question whether a tendency should be considered substantial enough to be worthy of an interpretation” (Kleven, 2007, p.226). Usually it uses statistical methods like tests of significance to measure the tendency being trivial or not in the quantitative studies. For this study, whether the results are worthy to be interpreted will be tested by the level of significance. This will be shown in chapter 5 data analysis.

Thirdly, the internal validity refers to whether the covariation between independent and dependent variables is a causal relationship. In China there are some observed phenomena like urban students are more than rural students in universities, boys are more than girls in science subjects, and those whose parents are teachers usually have good achievements at school, and although education is expanding it is still difficult for poor students to go to university. Are these observed connections causal relationships? In other word, whether those factors relating with socio-economic background impact children’s attainment in higher education? This study will use Bourdieu’s three forms of capital and Raftery and Hout’s MMI hypothesis, which are used as the working hypothesis in research of educational inequality, to support the causal inferences (further elaborated in chapter 5). Furthermore, the limitation of data may reduce the internal validity, because the survey of CGSS2005 is not primarily focused on educational inequalities. Thus only a few of indicators can be selected to measure inequality issue and some other indicators like income or parental occupation are ignored.

Fourthly, external validity means whether the inferences can be generalized to a wider context. The sampling of CGSS2005 is based on the data of Chinese Fifth Census, and sampling method adopts a stratified sampling that covers both rural and urban area as well as covers eastern, middle and western region of China. Therefore, the sample can represent the general population. The random error and the inconsistent ratio between data and actual population discussed above may diminish the external validity. Another problem that will reduce external validity is survey of CGSS2005

does not cover the whole China. It does not contain Tibet, Hong Kong, Macau and Taiwan. This is because Hong Kong, Macau and Taiwan are the provinces that have different political systems than mainland China and the survey in Tibet area confronts a lot of financial and technological difficulties. However, the absence of these provinces with special situations will not heavily influence the representativeness of the data. The data can still be representative of the mainland China.

## **4.7 Study limitations**

This study is only focused on the inequality issue in access to higher education. This is not because access is the most important stage of higher education. Access equality, progress equality and outcome equality are three important aspects of higher education equality. They can reflect inequality problems from different stages and different processes. However, CGSS2005 only has the data that are relevant with the access issues (attain higher education or not) but no data about issues such as how the respondents study in the institution or how is the employment situation of the respondents etc. Therefore, the study will only pay attention on the access issue due to the data limitation.

Moreover, the socio-economic backgrounds could include many factors. Again, because of the data limitation this study cannot choose all the factors and it only chooses the parents' education, the respondents' region of origin and respondent's gender as the indicators of one's family socio-economic background. However, factors like the provincial difference and income difference are also very significant that could affect educational inequality, but in this study they are not mentioned.

# Chapter 5 Data Analysis

This chapter can be divided into two sections. The first section describes how socio-economic background influences inequality in access to higher education in China through bivariate analysis together with some descriptive statistics. The second section elaborates on the trends of higher educational inequality in cohorts representing the three periods and finally explains the relationship between educational expansion and educational inequality in Chinese context over the study period.

## 5.1 Socio-economic background and higher education attainment

Four variables relating to one's socio-economic background are hypothesized to have impacts in access to higher education. They are analyzed from three perspectives and the results are explained in this section.

### 5.1.1 Where are the students from?

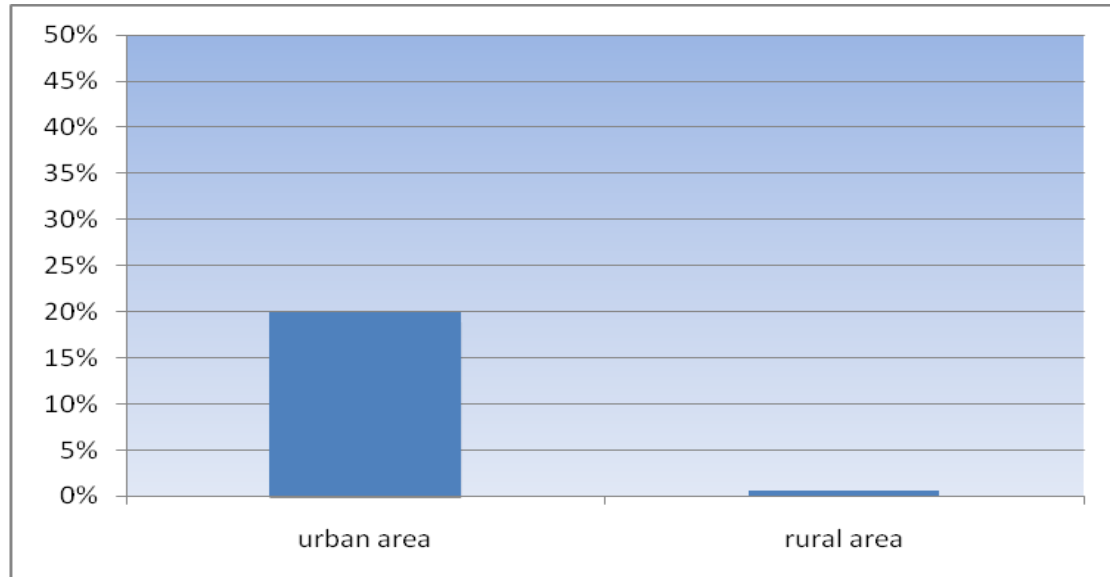
- **Overall analysis**

The correlation between independent variable of region of origin and dependent variable of higher education attainment can be measured by the phi coefficient. The result of the correlative analysis reveals that, the phi coefficient between the two variables is 0.307 ( $p < 0.01$ ). The result is positive correlation that means urban students are more likely to get higher education than rural students in China. We can also see this trend from Figure 6 below that people who have attained higher education in urban area account for 20% among the sample, while in rural area people



who have received higher education only account for 0.6%. The gap is very wide that has exceeded over 30 times.

**Figure 6: Higher education attainment rate of urban and rural areas in overall**



According to Bourdieu's (1986) perspective the result shows that region of origin as an indicator of economic capital could influence students in access to university in China. This may be because firstly China applies the urban-rural household registration system. The government emphasizes on the development of urban area and this causes the imbalanced development level between rural and urban. Rural income and consumption rates have lagged far behind urban area (Malle, 1995). The state also adopts two-dual patterns on educational management and educational financing that makes rural people cannot share the same educational right as urban people (Guo, 2007). For example it is very difficult for rural children to study in an urban primary school, they have to supply many application documents and pay extra fees. In addition, although higher education is open for all students, urban region can enjoy more enrollment quota in the national entrance exam. The household registration system is the prime reason that makes urban people are more advantaged.

Secondly, the imbalanced distribution of educational resources makes rural people in

a disadvantaged situation. The state prefers to allocate the limited educational resources to urban area and the core cities of China. Educational condition of rural area is worse than urban area and it can be presented from the perspectives of quality and quantity. Urban schools have modern teaching equipments like computers, labs, internet, video and audio, however, rural schools are even lack of schoolhouse and books (Guo, 2007). The rural schoolteachers usually have low educational background but they need to teach more students and subjects due to the staff shortage. This phenomenon is more serious in western rural China. As a result, the teaching quality cannot be guaranteed in rural area. Some people describe the situation as rural schools like Africa, urban schools like Europe in China (Zhang & Ding, 2006). The poor quality of basic education would lead to the low admission rate of higher education. On the other hand, rural area is lack of educational institutions. Financing is another problem that national funding to rural area is not enough compare with urban. A survey on educational finance of 374 towns in China shows that the public funds for per rural primary school student is around 40% lower than urban student. In 1999, the ratio of educational expense for each between urban secondary school student and rural secondary school student is 100:60.5 (China's rural research report, 2002).

The third reason that causes urban students are more advantaged in access to university is the imbalanced economic development situation between rural and urban. The gap between urban and rural family income is wide, and it has become wider to over three folds after 1990. Lower income leads to the lower level of consumption and living standard in rural area. Since the Chinese higher education has adopted the cost-sharing educational system, the tuition fees grow rapidly and have become a heavy burden for families. The negative influence of the increasing private cost on higher education to low-income family is much stronger than to high-income family that makes rural families are in a disadvantaged situation (Han, 2006).

### ● Cohort comparison

To begin with the analysis of cohorts, the phi coefficient of each cohort needs to be presented firstly (see Table 3).

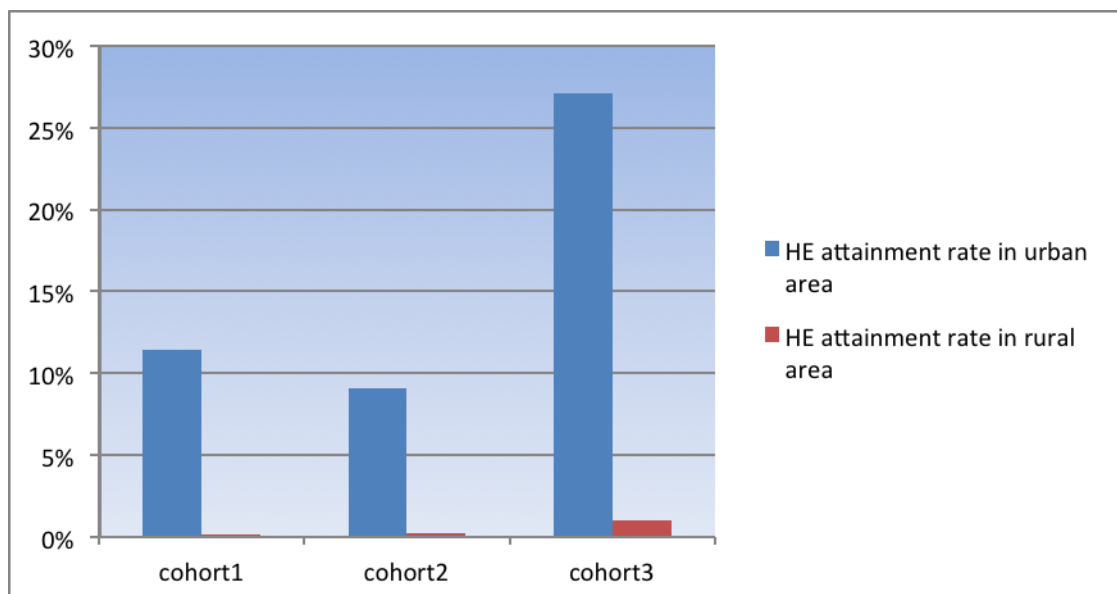
**Table 3: Phi coefficients between region of origin and higher education attainment for three cohorts.**

	Cohort 1	Cohort 2	Cohort 3
Phi coefficient	0.219	0.209	0.367

( $p < 0.01$ )

The results show that the correlations of three cohorts are all positive which mean urban people are more likely to access to higher education in all three historical periods. It is important to note that the influence of origin reaches to the strongest in cohort 3. We can see this trend from Figure 7 below more clearly that urban people have attained higher education are more than rural people in all three eras.

**Figure 7: Higher education attainment rate of urban and rural areas by cohort**



First of all, for cohort 1 the rate of higher education attainment for rural people is close to zero, but this rate is also not high for urban people which is just over 10%. This could be because the first period is a time of fast economic development that the new state pays more attention on promoting economic development, and the goal of higher education is to cultivate educated workforce in urban China (Zhou et. al, 1998). In rural China the state's primary goal is agricultural production that needs little education, knowledge and techniques in the old days. Therefore, the attainment of higher education is mainly emerged in urban area. In addition, the educational system is still elitism in this period that educational resources are very limited, for example China only had 229 normal colleges in 1957 and increased to 610 in 1962 (State Statistics Bureau, 1990). That's why higher education attainment is low in both urban area and rural area for cohort 1.

Secondly, for cohort 2 there are still more urban people than rural people attain higher education. However when compare with cohort 1 we can see that the higher education attainment rate in urban area decreases and the rate in rural area increases in this period. The rate decreases in urban area due to the Cultural Revolution that it almost stops higher education work. Students have no opportunity to access to universities because of the closing of institutions and the abolishment of entrance exam. On the contrary, the rate in rural area increases because Cultural Revolution establishes "worker-peasant-soldier" colleges, which are focused on enrolling students from rural area. Rural people are high supported and respected in this era in many fields such as education. Under this situation the influence of region of origin on higher education attainment decreases in this period.

Lastly, for cohort 3 the rate of rural people keeps growing to 1%, meanwhile the rate of urban people also increases to nearly 27%. It must be noted that the gap between urban and rural also reaches to the biggest in this period that the difference has reached to over 27 times. The higher education attainment rate increases in both urban and rural areas because the coming of new era. Chairman Deng Xiaoping highlighted

that “the development of education should correspond to the development of economy” in the national educational work conference in 1978 (Fan et al, 2010). The development of higher education becomes an important mission in China in order to construct socialist modernization. The department of education carries out higher education reform, for example it has established new enrollment system instead of traditional unified system in order to increase more opportunities for students to go to university. The “Reform and open door” policy that reform inside and open door to outside plays a very important role. It transforms China from planning economy to market economy. It has loosened the urban-rural household system and increased the rural to urban migration, thus the amount of rural students increases. In addition, it is also due to the expansion that the amounts of both institutions and students increase rapidly since 1999. Massive expansion has increased the amounts of rural students to acquire higher education (Qiao, 2008). However the gap between urban and rural becomes bigger during this era. This could be because market economy has abolished free higher education system, that leads to family economic background becomes an important factor on determining whether one can go to university. A study shows that there is 61.22% of rural families cannot bear the tuition burden and this figure is 16.01% of urban families (Jing & Zhai, 2009). Therefore, the quantitative raise of both rural and urban students does not weaken the influence of origin in access to higher education in China. Urban people are the first beneficiaries from reform and expansion.

The significant results from both overall analysis and cohort comparison show that region of origin is an important factor would influence the attainment of higher education in China. Moreover, such influence is getting stronger in current period. Rural students are still in disadvantaged situation.

### **5.1.2 Does parents’ educational level influence children’s attainment?**

## ● Overall analysis

The correlation between independent variable of parent educational level and dependent variable of higher education attainment can be measured by the Spearman's rho coefficient. The results show that the Spearman's rho coefficient between father's educational level and higher education attainment is 0.321 ( $p < 0.01$ ), and the Spearman's rho coefficient between mother's educational level and higher education attainment is 0.317 ( $p < 0.01$ ). Both of the results are positive correlations which indicate the higher educational level parents have the higher likelihood their children attain higher education.

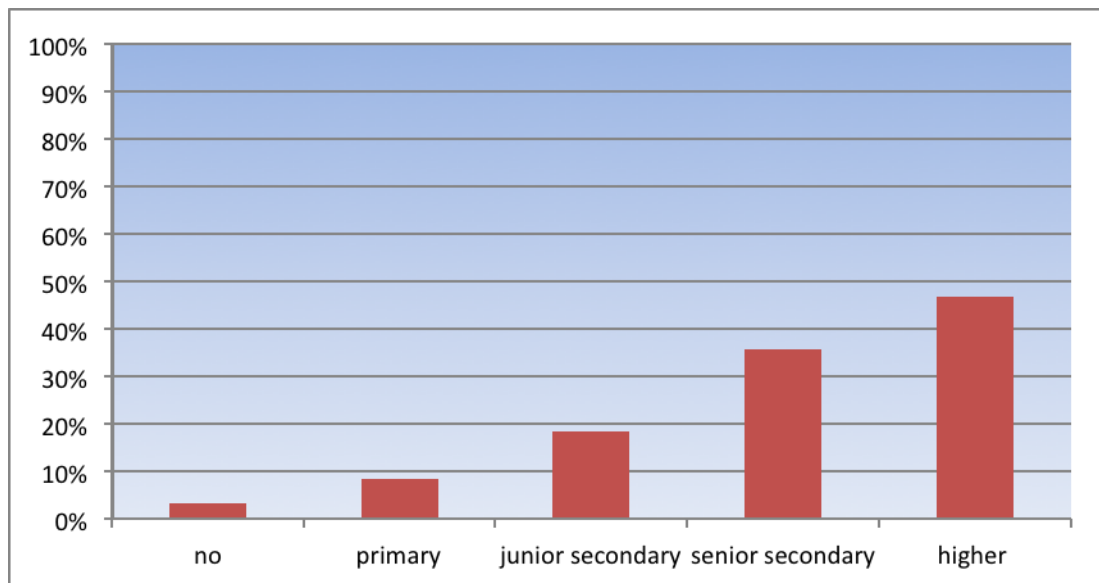
We can also see this trend from Figure 8 and Figure 9<sup>8</sup> below, which show how does higher education attainment rate change based on parents' different educational levels. It can be found out that the attainment rate is increasing gradually along with the upgrading of father or mother's educational level from no education to higher education.

According to Bourdieu's (1986) perspective the result shows that parents' educational level as an indicator of cultural capital could impact students in access to university in China. That could be because a well-educated family background plays a positive role in children's educational attainment. Here the positive influence will be explained from both internal and external.

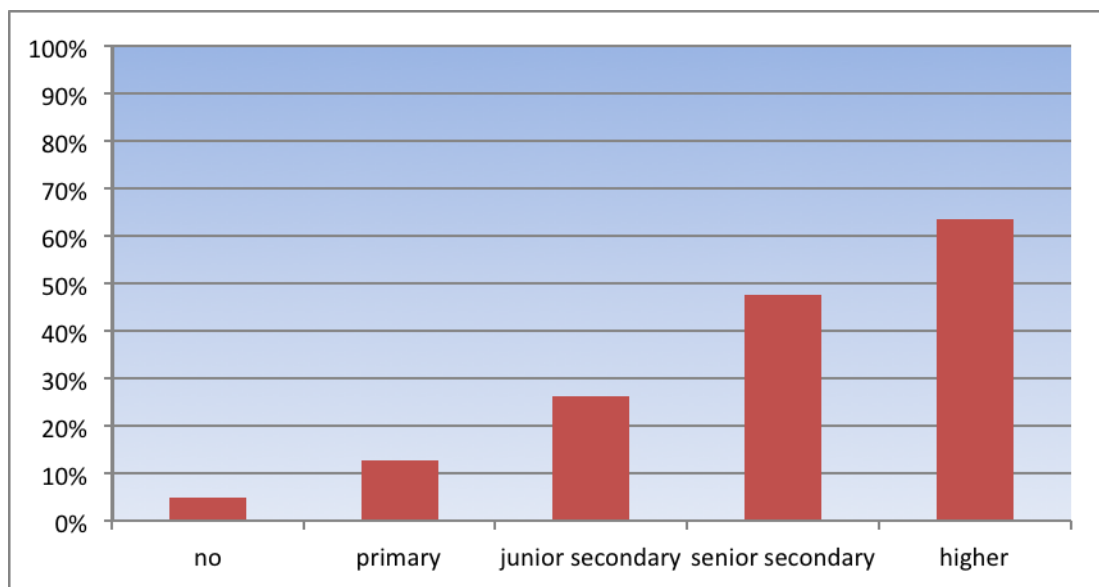
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<sup>8</sup> Figure 8 and Figure 9 adopt five categories to show parents' different education levels. As explained in chapter 4.4 parents' education level is actually coded as 11 values, here category 1 (no education), 2 (primary education) and 3 (junior secondary education) have the same meaning as previous values. However, the previous value 4 (senior secondary education), 5 and 6 (secondary vocational education) are integrated as one category "senior secondary education", and previous values 7 and 8 (tertiary vocational education), 9 and 10 (bachelor education), and 11 (master education and above) are integrated as one category "higher education". It's because the sample distributed so uneven, there are only tens of sample fall into value 11 for example, and this may lead to biased result. Therefore, in order to reduce bias here it has to integrate 11 education levels into 5 categories. In addition, the two charts are only needed to express the changing trend and relationship between higher education attainment rate and parent's education level, rather than to explain the specific rate.

**Figure 8: Higher education attainment rate by father's educational level.**



**Figure 9: Higher education attainment rate by mother's educational level**



Firstly, the internal influence of parent education is mainly manifested on that it would influence children's achievement and thereby influence their attainment. While, in China the achievement is a key factor that determine whether one can go to university. A well-educated parent usually has high expectation on children's education and hope their children could receive higher level of education than themselves which can be seen as the reproduction of education and is discussed before. Such expectation is related to and could predict children's achievement. Such

expectation could also be transformed into children's high study motivation and study confidence that are helpful to children's achievement (Cui et al, 2011; Chen & Yang, 2009). Well-educated family background could supply good studying environment and stimulation environment for children, which is helpful for improving children's achievement. For example, there are more books at home, children are more encouraged to enter interest class, parents can help children on studying as a co-teacher at home, parents can give children more guidance on decision etc. In addition, the internal influence could also be presented that it would impact children's attitude and behavior and thereby influence their attainment. Parents would more understand the importance of knowledge for one's future life if they have received education. Therefore, children could form a positive attitude on studying through the effects of their parents' language and daily behavior. For example, parents have no education consider higher education is a waste of money and they prefer children to go to labor market and earn money earlier, under this pressure, children will also form negative attitude to higher education and may have bad learning behavior at secondary schools. This is a common phenomenon in rural China.

Secondly, the external influence of parent education can be manifested through their neighborhood, friends, and colleagues. People are usually likely to choose neighborhood or to make friends that have the similar background with them, and educated people will work with similar educational background colleagues. A good neighborhood, for example residents with more education, has positive effects on children. The parents' social relationship such as their friends and colleagues will impact children's attainment as well from an indirect way. Children can get more touch with parents' friends or colleagues and make friends with their children as well. Then younger generation may learn from each other and influence each other, which may lead to the similar motivation of studying or the similar expectation of entering good universities.



### ● Cohort comparison

Table 4 below shows Spearman's rho coefficients between father's educational level and higher education attainment as well as the coefficients between mother's education level and higher education attainment of three cohorts. The correlations are positive for all cohorts. Parents' education always has influence on children and the influence is increasing.

**Table 4: Spearman's rho coefficients between parents' educational level and higher education attainment for three cohorts**

	Cohort 1	Cohort 2	Cohort 3
Father's education level and HE attainment rate	0.224	0.196	0.339
Mother's education level and HE attainment rate	0.113	0.203	0.339

( $P < 0.01$ )

In cohort 1, we can see that the father's influence is a bit stronger than mother's. This could be because in old China father is the mainstay of a family and has an influential position in the family. The traditional thought of "man is superior to woman" is deep-rooted. Father controls the family and other family members should obey. Woman has lower status in the family and should rely on her husband. Father is more likely has education than mother in the family. Therefore he has stronger influence on children than mother.

When comes to cohort 2 we can notice that the influence of father and the influence of mother on educational attainment change to be similar. This is due to the change of cultural thinking in Cultural Revolution period. The revolution attempts to break the

traditional Confucian culture because the government leaders consider the Confucianism is feudal culture that stands for the historical regression. Confucian culture is denied also the initiator of the culture Confucius (*Kong Zi*) is seriously criticized by public. The thought “man is superior to woman” of Confucianism is attacked, as a result the original status of family members has been changed. From this perspective the Cultural Revolution plays a tiny role in changing the effect of father and mother in a family.

However, we can also see that the impact of parental educational level on higher education attainment of cohort 1 and cohort 2 is lower than the influence in cohort 3. For cohort 1 it could be because in the old period both father and mother do not have high level of education or most of them has no education. For cohort 2 it could be because in this special period whether go to higher education more depends on individual’s political background (has been discussed in chapter 2.2.2). Intellectuals and cadres are rejected, but working class and peasant family are high respected regardless man or woman in a family, thus their children are very welcomed to access to higher education.

During the third period, both father and mother’s influence reach to the highest. Higher education is transformed into economic-oriented system under the economic reform. Whether an individual can go to university depends on personal performance, therefore, the educational environment of a family plays a very important role in helping children getting success at school. Although most parents have been aware of the importance of higher education, well-educated parents do can help children more than low-educated parents. Besides their helps on learning, well-educated parents could always supply their children more information and resources. For example they can use their social network to help their children taking advantages in the national entrance exam. Mother’s effect becomes stronger because in new era the status of female increase in both society and family.

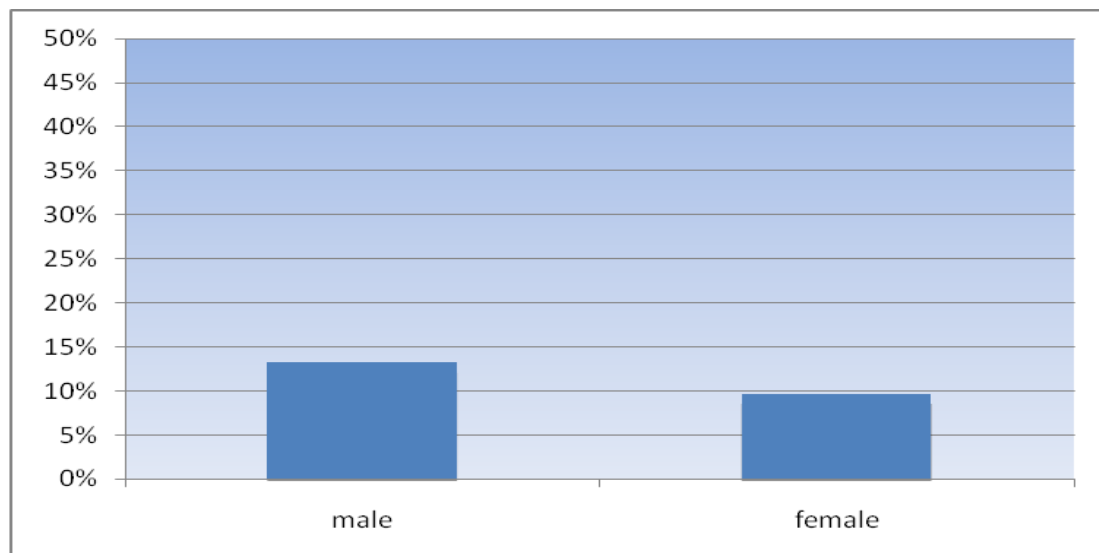
Both overall analysis and cohort comparison show that parents' educational level has positive influence on children in access to higher education in China. Moreover, such influence is getting stronger in present society.

### 5.1.3 Is gender still a key influence factor?

- **Overall analysis**

The correlation between independent variable of gender and dependent variable of higher education attainment can be measured by the phi coefficient. Thus according to the statistical analysis, the phi coefficient between the two variables is 0.055 ( $p < 0.01$ ). The result indicates that it is a positive correlation that male are more likely to obtain higher education than female in China. We can also see this from Figure 10 below that among the sample, male who have attained higher education take up 13.2%, whereas, for female the percentage is 9.7%.

**Figure 10: Higher education attainment rate of male and female in overall**



The gender difference can be discussed from both family and social perspectives. First of all from a perspective of family, the traditional Confucian attitudes and norms still exist in Chinese families. This is reflected in the continued preference for sons

than daughters in most of China. As a result, the presence of brothers will reduce the probability of attainment of daughters in a family. It means a family who has more than one child but has limited economic resources will usually support son rather than daughter to enter university. This is due to the consideration of the return of educational investment (John et al, 1992). Parents consider the return to the investment in a son is higher than that for a daughter. Boy is stronger and could be more likely to support parents in their old age so parents can benefit from the investment; however, girl is physical weak and would later marry into another family. In addition, girl would confront the sex discrimination in the labor market after graduation.

Secondly it turns to the perspective of society, which is mainly reflected on the sex discrimination in the labor market. In China girls are usually concentrated in majors like education, linguistics, and arts etc., while boys are usually centralized in subjects like engineering, information technology, computer, and mathematics etc. in the university. When they go to labor market men are heavily dominated in high priority sectors like construction, transportation, and also government and Party organizations where usually with high salary in China, while women are concentrated in low priority sectors like services, teachers, clothing, and food etc. (John et al, 1992). The enterprises will have preference to male than female to some extent. It's because employers don't expect to hire the person who will pay much attention on birth and taking care of family and the enterprises also don't want to provide the services like child care that female workers need. Under such social environment, women are in disadvantaged situation in access to higher education in China.

#### ● Cohort comparison

First of all, the phi coefficient between gender and higher education attainment of each cohort is shown in Table 5 below.

**Table 5: Phi coefficients between gender and higher education attainment for three cohorts**

	Cohort 1	Cohort 2	Cohort 3
Phi coefficient	0.096*	0.037**	0.063*

(\*p<0.01, \*\*p<0.072)

The results are all positive indicate that gender has influence in access to higher education; however, for cohort 2 the p value is less than 0.072 that is not significant as 0.01 thus has no meaning in this study. We can also see this result from Figure 11 below. Men attained higher education are more than women in all three cohorts. In addition, in cohort 1 the gap between male and female is the biggest and it decreases afterwards.

For cohort 1 the higher education attainment rate of men is over two times than the rate of women (9.3% to 4.4%), men have more possibilities to access to higher education. This could be because there is no birth control policy<sup>9</sup> in the first historical stage in China. There are usually two to seven children in one family and of course family economic background is very poor. As was discussed above parents would prefer boy than girl to obtain schooling education when they have more than one child in the family. Therefore, boys have more opportunities than girls to accept higher education.

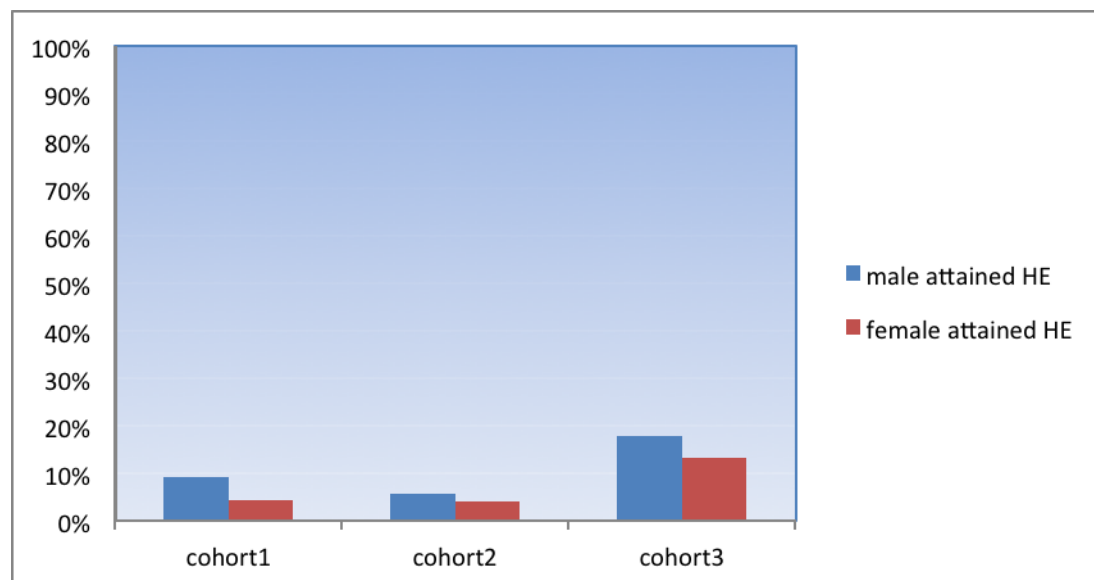
From Figure 11 we can see that the gap between male and female is getting smaller in cohort 2, but the statistical result is not significant (p<0.1) on the same level of this study (p<0.01). So we cannot say gender difference is getting smaller. As explained in Chapter 2.2.2 this period is a time of turmoil that higher education is almost stopped,

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<sup>9</sup> Birth Control Policy: China proposed the birth control policy as a national policy since 1982. The policy requests that one couple can only birth one child in order to control the fast growth of the population.

in addition there is no much data about this ‘gloomy’ period in China. Therefore, the result has no meaning and it is also difficult to explain the reason.

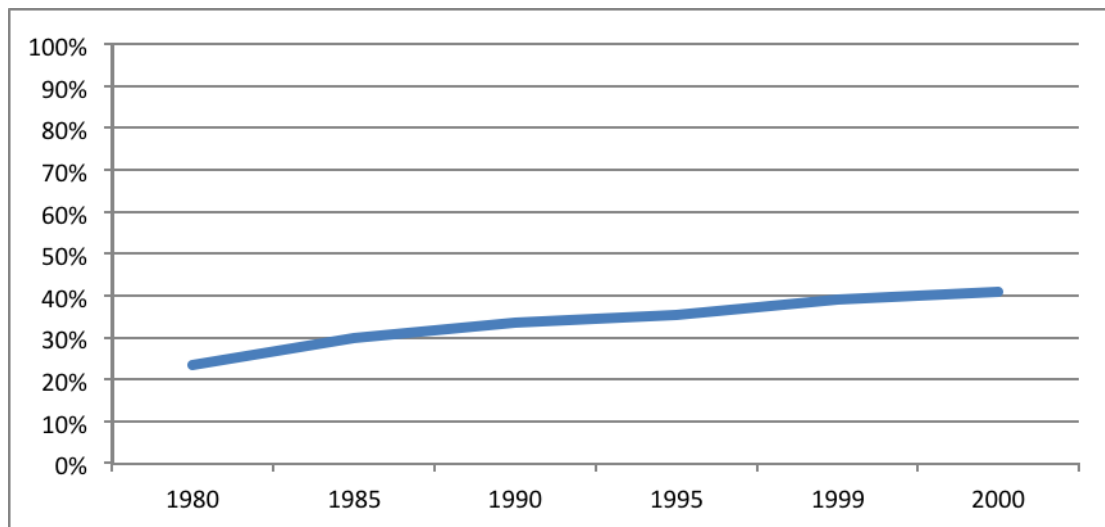
**Figure 11: Higher education attainment rate of male and female by cohort**



Cohort 3 could better explain the changing tendency of gender difference. The gap between male and female becomes smaller (17.8% to 13.3%) compare with cohort 1. In other word, the influence of gender on higher education attainment becomes weaker in this period. The educational expansion has reduced gender difference and female could enjoy more opportunities in access to higher education. The proportion of female in the university is increasing all the time (see Figure 12).

The gender gap is getting narrow also because in new era (cohort 3) the status of female is raised in both society and family. The government has instituted a series of measures to improve the role of woman. Moreover, education helps to change people’s attitude that better-educated people have more egalitarian attitude to gender (Shu, 2004). The improvement of parent educational level in new era reduces the biased attitude to female. Parents treat their children in a more egalitarian way. In modern China, whether one can access to university mainly depends on his/her personal performance.

**Figure 12: The proportion of female students in university of selected years.**



(Source: China Statistical Yearbook, 2001)

In sum, the result expresses that gender has influence on access to higher education in China and male are advantaged than female. However the influence of gender is becoming weaker. In addition, it should be also noted that the influence of gender on higher education attainment is not that strong in China compare with other factors of region of origin and parents' educational level, which have been analyzed above. Gender is no longer a key factor that affects higher education attainment especially in modern China.

## **5.2 Gini inequality index and educational expansion**

The degree of higher education inequality is assessed by Gini index and the index of each cohort can be calculated by the method discussed in chapter 4.5. We hypothesized that each independent variable has influence on the dependent variable of higher education attainment. By using "Analysis-ROC curve" of software SPSS we get four ROC curves of four independent variables for each cohort (see Figure 13, 14, 15) and we also get four AUC values of four curves for each cohort (see Table 6). The highest value of AUC of each cohort is selected because it can represent the highest degree of inequality. Therefore, for cohort 1 the highest value is 0.730 that from

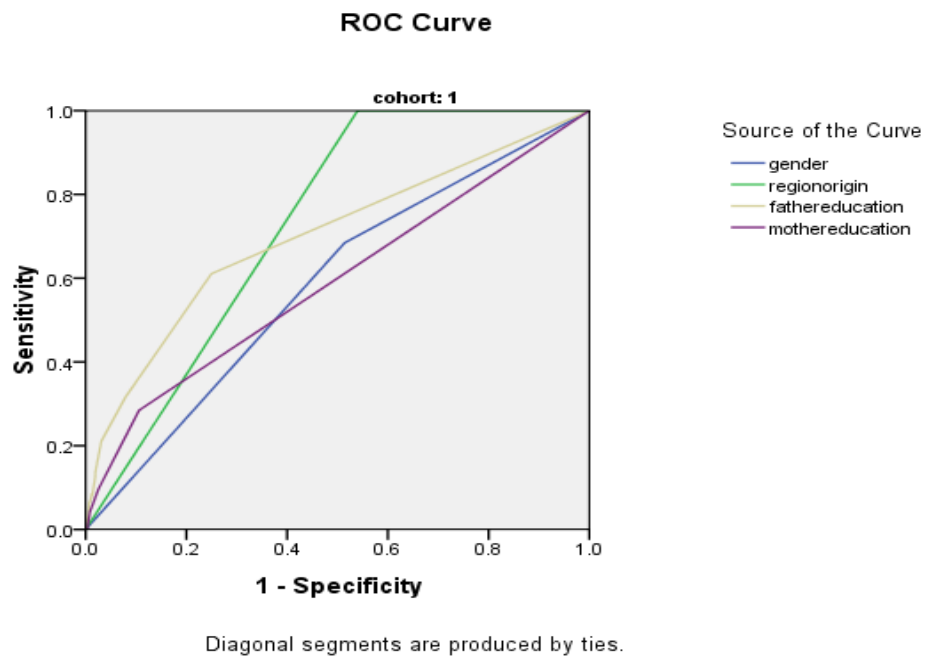
region of origin variable, for cohort 2 the highest value is 0.748 that also from region of origin variable, and for cohort 3 the highest value is 0.759 that from father's education. These values could show the probability of a correct identification of whether or not an individual received higher education only based on the factors (region of origin, gender, and parents' education). Finally taking the value into Gini index formula to get the inequality index of each cohort as follows:

$$I(\text{cohort 1}) = (2 \cdot 0.730 - 1) \cdot 100 = 46$$

$$I(\text{cohort 2}) = (2 \cdot 0.748 - 1) \cdot 100 = 49.6$$

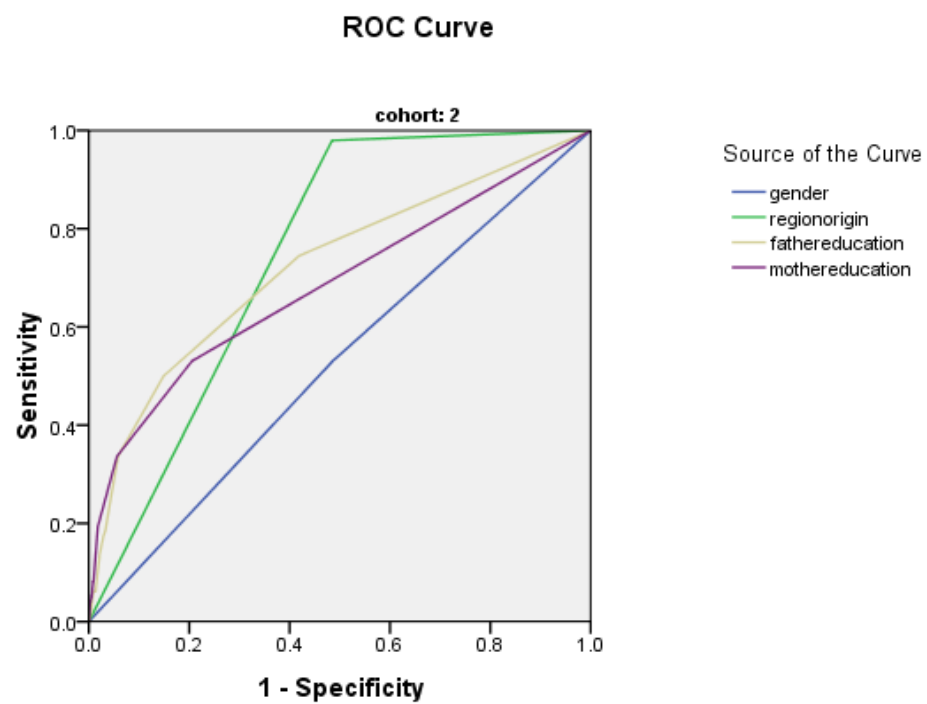
$$I(\text{cohort 3}) = (2 \cdot 0.759 - 1) \cdot 100 = 51.8$$

**Figure 13: ROC curves of four independent variables of cohort 1**



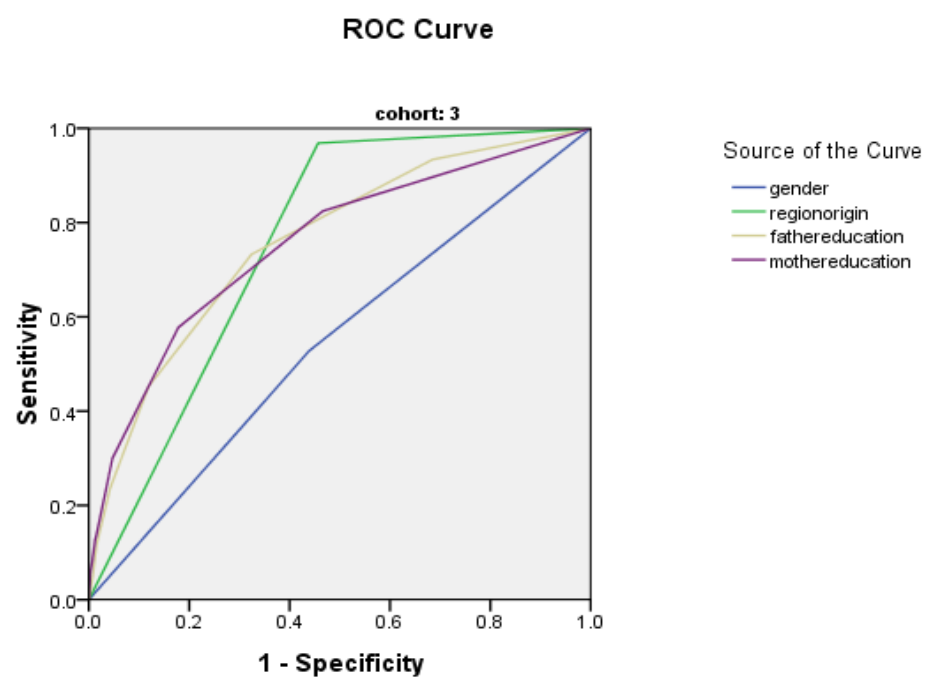


**Figure 14: ROC curves of four independent variables of cohort 2**



Diagonal segments are produced by ties.

**Figure 15: ROC curves of four independent variables of cohort 3**



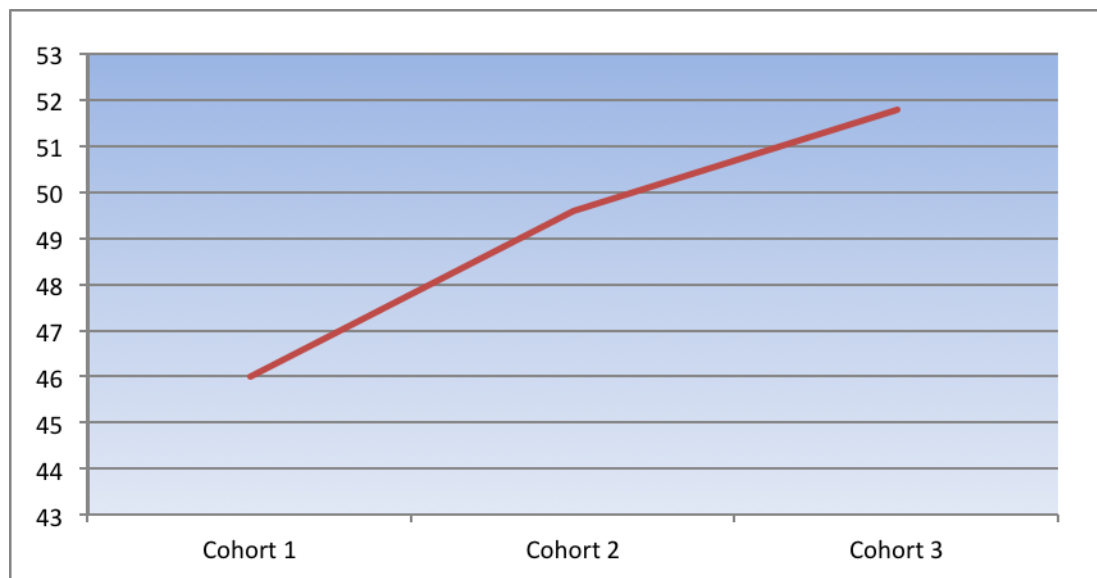
Diagonal segments are produced by ties.

**Table 6: Area under the curves (AUC) of each cohort**

Independent variables	AUC of cohort 1	AUC of cohort 2	AUC of cohort 3
Gender	0.585	0.522	0.544
Region of origin	0.730	0.748	0.756
Father education	0.699	0.723	0.759
Mother education	0.591	0.685	0.755

The result reveals that in the past fifty-six years the degree of inequality in access to higher education in China has been increasing although the trend is not very strong. The inequality index increases from 46 in cohort 1 to around 52 in the youngest cohort 3 (see Figure 16). In other word, the impacts of socio-economic background on higher education attainment are becoming stronger along with the development and expansion of Chinese higher education. It should be noted that the highest inequality is from the influence of region of origin for cohort 1 and cohort 2; however it is from the influence of father's education for cohort 3. It indicates that region of origin has stronger influence on access to higher education in China compared with other three factors; however the influence of parent education also cannot be ignored because it has become stronger in current China.

**Figure 16: Gini inequality index in access to higher education by cohort**



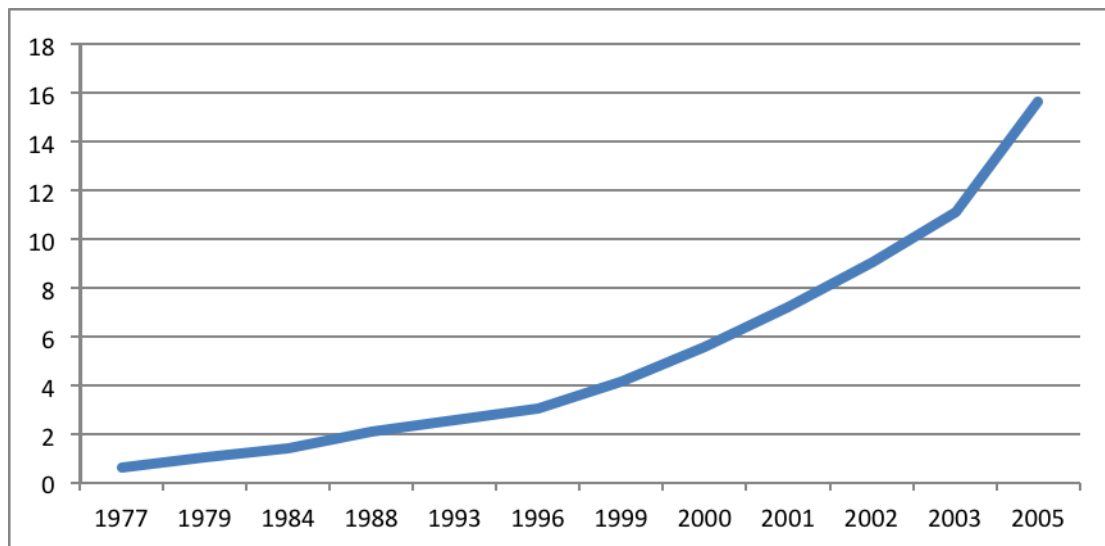
From the result we also know that higher education attainment is always influenced by the socio-economic background, even at the beginning of the establishment of new China (1949). The inequality level is 46 in the first period which is also not low. Why the degree of educational inequality is growing in China? In other word, why the influence of socio-economic background on higher education attainment is getting stronger in China? This could be because firstly in the first period (1949-1965) when the state is just established, the whole China is under a poor circumstance. The gap between urban and rural areas is not so wide compared with the third period. Also, the gap among parents' educational level is not that big, because the majority of parents are still illiteracies. In the Cultural Revolution period (1966-1976), as has discussed above higher education admission is not based on student's performance but on student's political background. The government attempts to intervene higher education through political approach that restrain intellectuals to enter university but produce opportunities for workers and peasants to enter university.

However in the most current period (1977-2005) the Chinese economy develops very fast through the economic reform. The development strategy of the government is that let a group of people to get rich first. The urban or city people particularly from the western region become richer due to the governmental policy supports. As a result a wide difference between rural and urban development emerges. The influence of region becomes stronger to higher education attainment. On the other hand, the influence of cultural background also becomes stronger because the average level of parent education is improved in this period.

Meanwhile another important characteristic of the third period is that the numbers of students go into higher education increase significantly (see Figure 17). From the year 1977 to 1998 the numbers of students enrollment in higher education increased from 0.625 million to 3.409 million. The large-scale expansion of Chinese higher education starts from 1999, since then the numbers of university students grow drastically that has exceeded 15 million in 2005. The participation rate of higher education has

reached to 23.3% till 2008 (Sina, 2009) that enable China access into the stage of mass higher education.

**Figure 17: Numbers of student enrollment in higher education of selected years**  
(Unit: million)



(Source: China Statistical Yearbook, year of 1981, 1990, 1999 and 2006)

All in all, the result implies that although the numbers of university students increase, the demand of higher education is still not satisfied in china. The quantitative growth could not reduce the educational inequalities in access among classes. Privileged groups with better family socio-economic background are the first beneficiaries. This has reflected the hypothesis of Maximally Maintained Inequality.

# Chapter 6 Conclusion

This chapter presents the results of the study firstly, and then it discusses about the theoretical implications as well as the policy implications of the research under Chinese context.

## 6.1 Results of the study

This study focuses on issue of inequality in access to higher education in China. It has analyzed how socio-economic background influence higher education attainment with the comparison among different historical periods during the last fifty-six years (1949-2005). It has also analyzed the Gini inequality index in access to higher education in China and how does it change during the study period. In terms of the theoretical framework, the study uses Bourdieu's three forms of capital to analyze the impacts of family background that may lead to educational inequality, and uses Raftery and Hout's hypothesis of Maximally Maintained Inequality (MMI) to analyze the relationship between educational inequality and educational expansion. All the results from this study are expressed in this section.

First of all, from the overall analysis we get the results that region of origin, father's educational level, mother's education level, and gender all have positive correlation with higher education attainment. According to Bourdieu's (1986) perspective, these factors can be regards as the indictors of three forms of capital and the uneven distribution of these factors would lead to inequality. Therefore, we can say that all four factors have influence on higher education attainment and may lead to educational inequality. Moreover, the influence changes among different historical periods. The impact of region of origin and parents' educational level is getting stronger; on the other hand the influence of gender is getting weaker during the study

period (1949-2005) in China.

For the influence of region of origin, urban population is more advantaged than rural population in access to higher education in any period. There are always more urban students than rural students studying in the universities in each period. The proportion of urban people attain higher education is over 30 times than the proportion of rural people for the whole population. Furthermore, the trend is that the influence of region of origin becomes to be stronger in current period and the gap between urban and rural reaches to the widest in the current period (1978-2005).

For the effect of parental educational level, the higher the parents' educational level the more possibilities one could attain higher education. The influence of father's educational level on access to higher education is stronger than mother's, however the impact of mother's educational level becomes strong gradually and reaches to the same level with father in the third period (1978-2005). It is important to note that the influence of both father and mother's educational level achieve to be the strongest in the third period (1978-2005).

For the impact of gender, male are more advantaged than female in access to higher education in any period. There are more boys than girls in higher education in each era although the gap is not too wide. However compared with region and parent education, gender is not a very important factor to influence higher education attainment. The influence of gender is becoming weaker currently.

Secondly, in China the degree of higher education inequality is increasing which means the influence of family socio-economic background is becoming stronger from 1949 to 2005. Although more and more students could receive higher education, the economic, social and cultural background keeps to impact attainment. Privileged groups are still advantaged in access to higher education. This result has reflected Raftery and Hout's hypothesis that quantitative growth on a certain level of education

may not decrease the inequality level.

## **6.2 Theoretical implications of the study**

The results of this study have answered the research questions and also reflected the hypotheses through some points. However it is important to mention that this study is not a comprehensive or complete research due to the limitation of data. Several factors relating to socio-economic background are selected in this study, but actually these are not enough. What are the impacts of other factors like parents' occupation, family income, minority and party member are not analyzed. These factors also play very important roles on higher education attainment. The author hopes to see other studies focus on these issues. In addition, the MMI hypothesis can only study educational inequality from the perspective of quantity. Besides the study of quantity the study of quality such as which institution and which study programme one is going to attend is also important. For analyzing such problem other hypothesis is needed such as the Effectively Maintained Inequality (Lucas, 2001). The author also expects to see more studies about quality in access to higher education under Chinese context.

## **6.3 Policy implications of the study**

From the results of this study we know that except for personal ability and effort whether one can access to higher education depends on his/her family background. The issue of higher educational inequality is getting more serious in current China. The author proposes the following suggestions through this research.

The suggestions about solving the problem of rural-urban difference will be discussed firstly. The government should gradually change the two-dual household registration system and promote rural people to enjoy the same welfare and treatment with urban

people. Moreover, the government should also invest much money and distribute more educational resources to rural area. The investment should be assigned on secondary education firstly in the form of building more schools and absorbing more good-quality teachers in rural area, because secondary education attainment would influence the transition rate of higher education directly. After that universities and colleges should be established in rural area in order to ensure rural students can receive higher education in their own region. The Chinese educational expenditure is insufficient that only takes up 3.48% of GDP (Liu & Wu, 2010) by 2008, it is lower than the world average level 4.5%. Finally, the government needs to pay much attention on improving the rural economic development as well as their living standards. From this point of view, the tuition fee of higher education also needs to be decreased in order to reduce the economic burden of the public.

Secondly, some suggestions about dealing with the problem of cultural difference will be expressed in this section. The children whose parents have low educational background should get much attention in the class since they are in the primary school. Teachers should help them to form good learning habits, good learning methods, and good learning attitude. In order to improve the educational level of parents as well as the entire Chinese society, a life-long learning system should be established. The government should encourage the public to enter school at any age, and the media should also do some propagate works. Therefore, the government should establish more different types of institutions such as universities for the elderly in order to satisfy different aged people's demands. Although there are some adult universities which are the main choice for old people to get education in China, the quality is not very satisfied. Furthermore, again the government should solve the problem of high tuition fee, because parents who even have high burden on supporting their child would not invest money on their own education. Finally, communities or local government should launch some exchange events or meetings about family education that could provide chance for parents to exchange opinions or ideas about children's education.



Thirdly, although the result has shown that the gender difference is decreasing gradually in China, there are still some works we can do to make it better. Universities should balance the number of male and female in a class, and should not prefer boys in the enrollment process particularly of those science subjects. There should have a gender equality committee in each university in order to guarantee female students in access to, process of, and outcome of higher education. The labor market should treat male and female graduates same, for example firms or companies should employ balanced amount of male and female graduates. The government should put forwards laws or regulations to guarantee this. Furthermore, the rural female students should be more taken care about, both government and non-government organizations should protect them and supply them a good educational environment. This is because rural people insist on the traditional thinking “boy is better than girl” much deeper than urban people.

Lastly, there are still many children cannot go to university, the Chinese higher education therefore still need to be expanded. By now the participation rate of China is just over 20% which means there are still over 70% of people cannot receive higher education. Different types of institutions need to be established in order to satisfy more demands. For example, it is a good idea to build more vocational institutions. A unified national entrance exam around the whole country is also needed that could supply a more equal environment. All in all, there must be a long way to go to reduce the educational inequality in China.

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